Safety Maintenance and Production

EST. 1901 AMERICA'S PIONEER MAGAZINE IN ITS FIELD

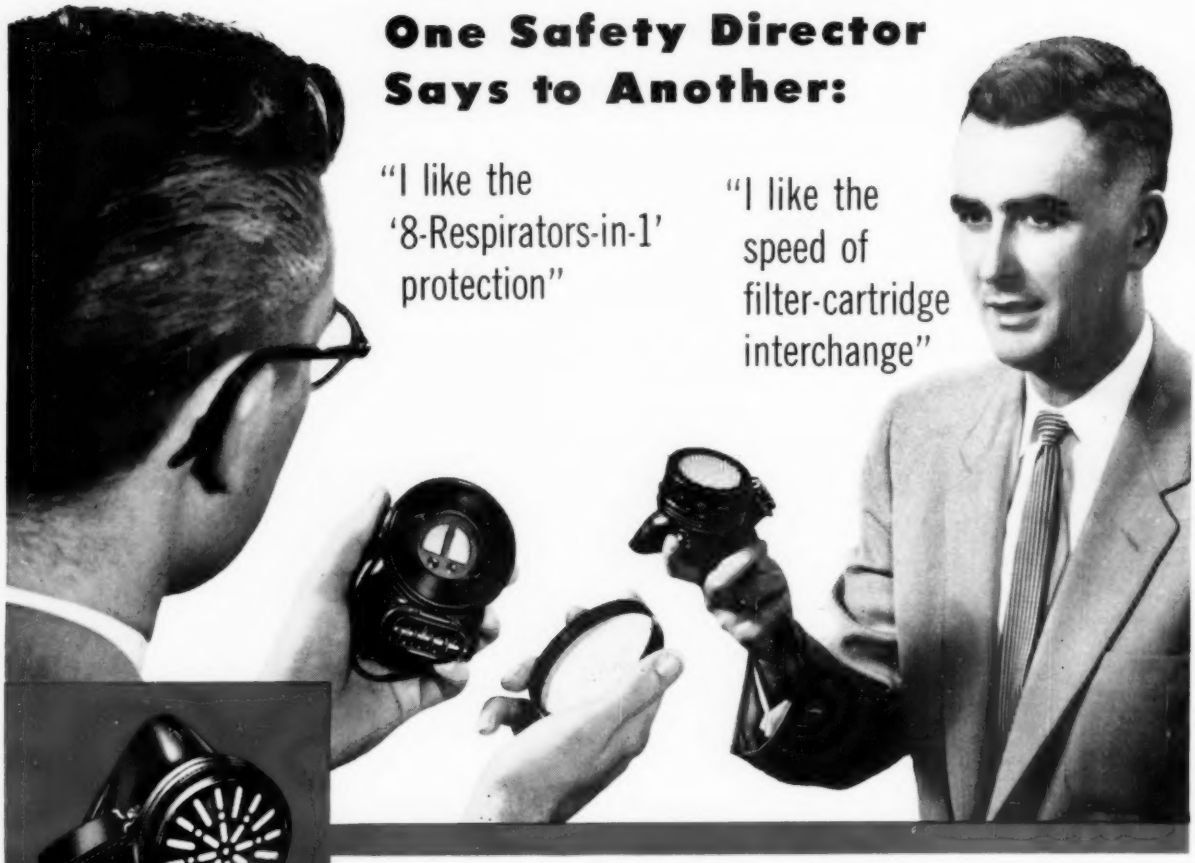
FIFTY CENTS MAY, 1954

Respiratory Protection

One Safety Director Says to Another:

"I like the '8-Respirators-in-1' protection"

"I like the speed of filter-cartridge interchange"



It's the One and Only AO R2000

Want a single, interchangeable cartridge respirator that will protect your workers against (1) nuisance and pneumoconiosis-producing dusts (2) toxic dusts (not significantly more toxic than lead) (3) combination of all dusts (4) light organic gases and vapors (5) acid gases and vapors (6) combined acid and organic gases (7) ammonia (8) poisonous, disease-producing and a combination of dusts (not significantly more toxic than lead)? You get it with the AO R2000 and its 7 interchangeable cartridges, chemically treated felt filter (an AO "first") and prefilter for painting exposures.

Speed of interchange? *It couldn't be faster!* A twist removes the metal filter cover. Take out the R31 organic vapor cartridge for instance, and insert an R32, (the acid gas cartridge) or an R33 (acid-organic) or R34 (ammonia). Do the same for dust protection, using the recommended AO dust cartridge.

Quick Facts

And remember these advantages of AO research and engineering . . . the Flexible Neoprene Rubber Facepiece gives a leak-proof fit . . . Cartridges R31, R32, R33, R34 are made of durable, non-sparking materials . . . weigh less than previous types . . . the double headband is convenient and comfortable. Yes, and the entire respirator can be disassembled quickly without tools. Your nearest AO Safety Products Representative can supply you with the right equipment.

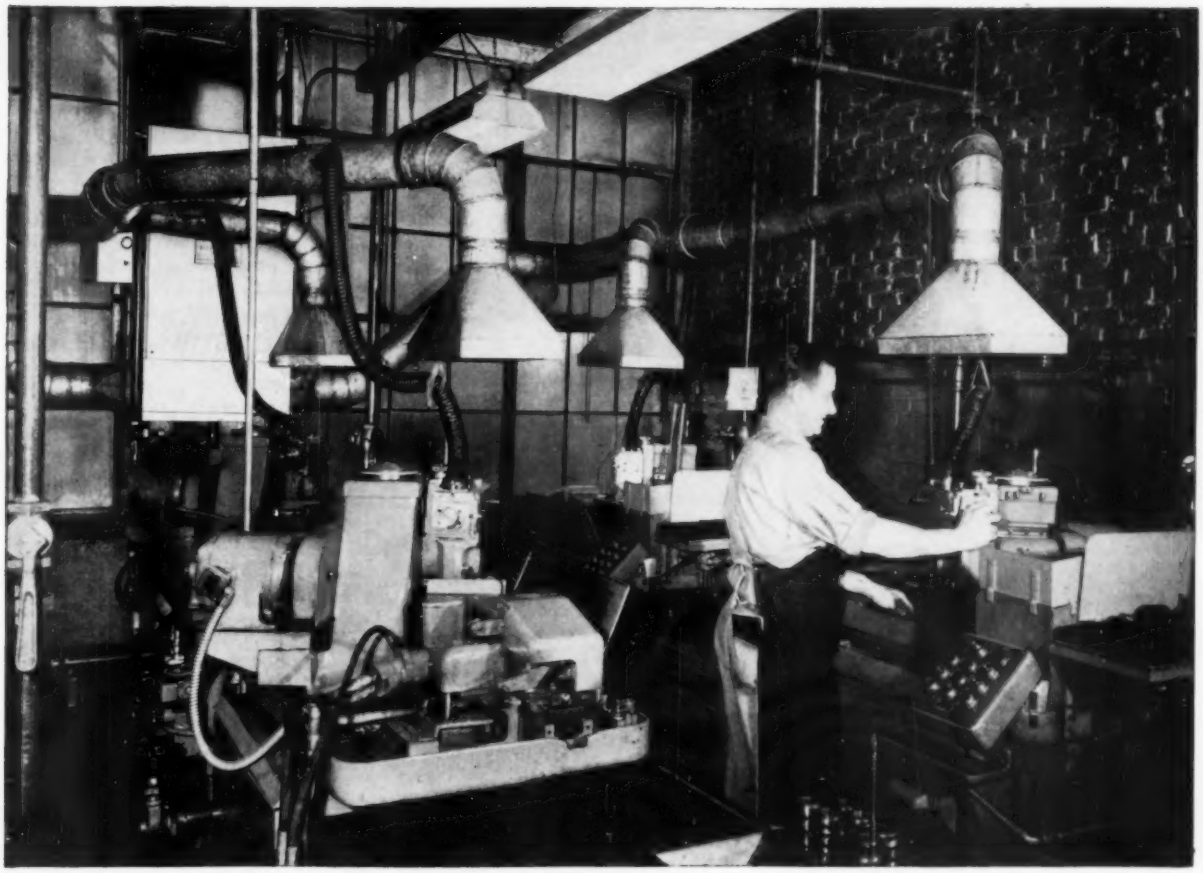
American Optical

SAFETY PRODUCTS DIVISION

Keep your workers in the Safety Zone with American Optical Safety Equipment

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

(For full details, use Key # R-1 on free Inquiry Card on page 77)



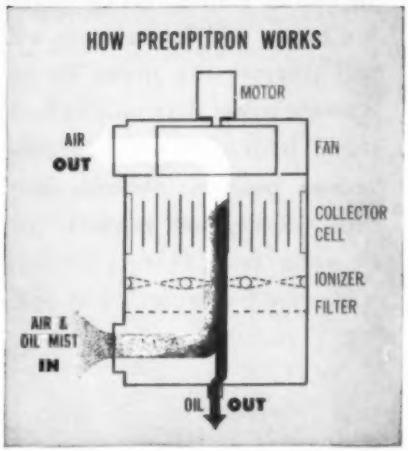
This view shows a PO-12 oil mist control unit and duct for flute-grinding machines.

WESTINGHOUSE PRECIPITRON ELIMINATES COSTLY AND DANGEROUS OIL MIST

Operating at full tilt, scores of thread-grinding and drill-fluting machines created an oil mist problem at Greenfield Tap & Die.

To overcome this situation, Greenfield installed several oil mist control units, incorporating a PRECIPITRON with a Westinghouse non-overloading fan. Now, oil mist and smoke are removed from the air and collected on the plates of the Precipitron by electrostatic action. Clean, mist-free, filtered air flows back into the shop . . . working conditions have been improved 100%—employee discomfort eliminated—and management satisfaction is complete.

If you have an oil mist problem, get in touch with your Westinghouse-Sturtevant sales engineer today. He has a full knowledge of the application of air handling and air cleaning apparatus to meet your requirements. Call your local Westinghouse office or write Westinghouse Electric Corporation, Sturtevant Division, Boston 36, Massachusetts.



Oil-laden air passes through filter which strains out chips and abrasive particles . . . ionizer electrically charges each oil mist particle . . . then collector cell attracts and separates oil and smoke from the air stream. Clean air continues on through. Oil forms into droplets on collector cell plates and falls to the sump for re-use.

WESTINGHOUSE AIR HANDLING

YOU CAN BE SURE... IF IT'S Westinghouse

J-80392

(For full details, use Key # R-2 on free Inquiry Card on page 77)

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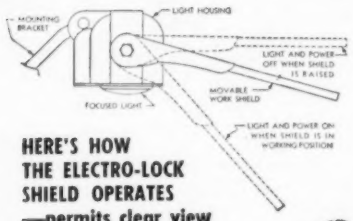
JUNKIN
ELECTRO-LOCK SHIELD

The Shield Which Commands Operator Safety

The position of the Junkin Electro-Lock Shield is controlled by mercury switches. Interlocking power and light circuits will not permit the machine to operate unless the shatter-proof shield is in a completely protective position. Affords perfect visibility, and protects the operator from flying particles. Write for free bulletin No. 103.


MOUNTING BRACKET
LIGHT HOUSING
LIGHT AND POWER—OFF WHEN SHIELD IS RAISED
MOVABLE WORK SHIELD
FOCUSED LIGHT
LIGHT AND POWER ON WHEN SHIELD IS IN WORKING POSITION

HERE'S HOW THE ELECTRO-LOCK SHIELD OPERATES —permits clear view of work, still providing maximum protection

JUNKIN
SAFETY APPLIANCE CO.
101 S. FLOYD ST.
LOUISVILLE 2, KENTUCKY

(Use Key # R-3 on Inquiry Card on page 77)

THE Future SHOWS

Raleigh, North Carolina *May 4–6*

Twenty-fourth Annual North Carolina Statewide Industrial Safety Conference (Sir Walter Hotel). H. S. Baucom, Safety Director, North Carolina Industrial Commission, Raleigh, North Carolina.

Baltimore, Md. *May 6–7*

Annual Governor's Safety-Health Conference & Exhibit (Lord Baltimore Hotel). Joseph A. Haller, Safety Director, State Industrial Accident Commission, Equitable Bldg., Baltimore 2, Md.

Oklahoma City, Okla. *May 12–13*

Sixth Annual Oklahoma Safety Conference (Biltmore Hotel). Bob Eastman, Manager, Oklahoma Safety Council Inc., 1600 N.W. 23rd Street, Oklahoma City, Oklahoma.

Chicago, Ill. *May 12–14*

Greater Chicago Safety Conference & Exposition (Sherman Hotel). Joseph F. Stech, Manager, Greater Chicago Safety Council, 10 N. Clark St., Chicago 2, Ill.

Washington, D. C. *May 17–21*

Fifty-eighth Annual Meeting National Fire Protection Association (Hotel Statler). National Fire Protection Assoc., 60 Batterymarch St., Boston 10, Mass.

Seattle, Wash. *May 20–21*

Twentieth Forest Products Safety Conference (New Washington Hotel). Pat Reiten, secretary, c/o Simpson Logging Co., Shelton, Wash.

Groton, Conn. *June 1–2*

Ninth Annual Connecticut Industrial Safety Conference (Griswold Hotel). John W. Kent, manager, Connecticut Safety Society, 26 Chaucer Court, Woodmont, Connecticut.

York Harbor, Maine *Sept. 16–17*

Twenty-seventh Annual Maine State Safety Conference. (Marshall House): A. F. Minchin, Secretary, Industrial Safety Division, Dept. of Labor and Industry, Augusta, Me.

Chicago, Ill. *Oct. 18–22*

Forty-Second Annual National Safety Congress and Exposition (Conrad Hilton Hotel). R. L. Forney, General Secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Materials Handling Show

THE Society of Industrial Packaging and Materials Handling Engineers has launched plans for the 1954 ninth Annual Industrial Packaging and Materials Handling Exposition, Competition, and Short Course. They will be held at the Coliseum in Chicago, the exposition and competition Sept. 28-30, inclusive, and the Short Course Sept. 27-30.

C. J. Carney, Jr., Managing Director of SIPMHE and the yearly events, said that an eminent institution of higher learning again will conduct the 1954 Short Course. The Massachusetts Institute of Technology, University of Illinois, Wayne University, Temple University, and the Case Institute of Technology have directed previous short courses.

Carney reported that the 1953 exposition in mid-October in Boston was such an outstanding success from the exhibitors' viewpoint that considerable display space in next September's exposition already has been tentatively engaged.

Don't be fooled by Fast Action Cleaners

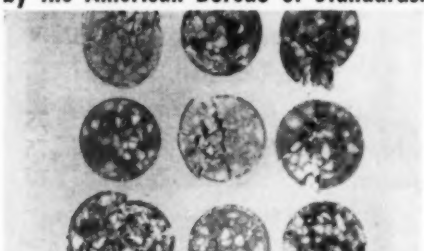
You can't judge a cleaner by fast wetting alone. When harmful ingredients are added to increase the speed of cleaning . . . you also increase maintenance costs—you sacrifice the beauty and appearance of your floor. Because harsh so-called fast wetting cleaners work by ATTACKING soil AND your floors. They not only remove dirt and grease, but relentlessly wear away the floor surface; rob resilient floors of natural oils, causing them to become brittle, colors to bleed; build up a crystalline expansion in cement and terrazzo causing untimely deterioration. Due to the roughing and pitting of the surface, floors become increasingly harder to clean each time, and labor costs go up.

That's why Hillyard SUPER SHINE-ALL has no equal in the cleaning field. Its superior cleaning power, by safe neutral chemical action, has been proved non-injurious to finest floors or finishes. It is the result of nearly 50 years specialization in making cleaning a faster, safer, less expensive operation. Through the years it has won the approval of the Asphalt Tile Manufacturers, Rubber Tile Manufacturers, Cement and Terrazzo Contractors, Portland Cement Companies, Maple and Oak Flooring Manufacturers.

That's why—year after year, SUPER SHINE-ALL proves to be *your* best cleaning buy.

How Improper Cleaners Ruin Terrazzo and Cement

Photos show results of Tests conducted over a 4-year period by the American Bureau of Standards.



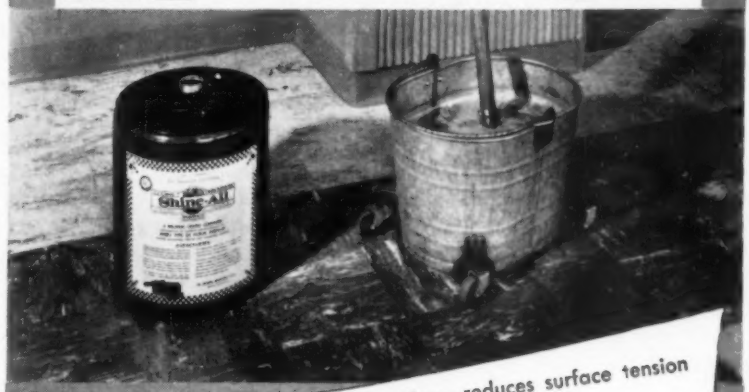
Terrazzo disks on which cleaners containing soda ash and trisodium phosphate were used. Test applies equally to cement. Note damaging action which has occurred in the porous cement.

Terrazzo disks on which a neutral chemical cleaner was used, remain in perfect condition. The National Terrazzo and Mosaic Foundation states . . . "soaps and scrubbing powders containing caustic alkali should never be used in maintenance of terrazzo . . . use a *good neutral cleaner.*"

SUPER SHINE-ALL

REMOVES THE DIRT—*NOT* YOUR FLOOR

CLEANS ALL WAYS FOR THE PROTECTION OF ALL FLOORS



1. by controlled harmless wetting action—reduces surface tension of water providing complete penetration of soil.
2. by penetrating action—gets under the dirt layer.
3. by chemical sudsing action—produces rich cleansing suds that spread out and clean thoroughly.
4. by emulsifying action—breaks up fats and oils into small particles to mix with water permitting gentle agitation instead of hard scrubbing.
5. by suspending action—lifts and suspends soil solids such as dust, soot, in liquid for easy removal.
6. by dissolving action—reduces water soluble material to solution.

A SAFE

NEUTRAL CHEMICAL CLEANER

Contains no caustic alkalies!

Contains no crystal forming ingredients!

HALVES CLEAN-UP TIME

SUPER SHINE-ALL cleans instantly by 100% neutral chemical action. Leaves no harmful residue; *eliminates* the extra labor step of rinsing. Unlike heavy bodied soap cleaners it will not form a dulling calcium soap film so difficult to remove. Maintenance continues to be quick and easy—and Super Shine-All cleaned floors retain their original freshness for years. Get in touch with the Hillyard Maintaineer (floor expert) near you. He'll be glad to show you how to save cleaning costs the superior Shine-All way.

On Your Staff . . . Not Your Payroll!

Write for informative folder "Don't Clean Your Floors by Destroying Them." Free.

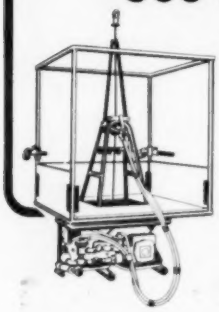
ST. JOSEPH, MO.

Passaic, N. J.
San Jose, Calif.

Branches in Principal Cities

(For full details, use Key # R-4 on free inquiry Card on page 77)

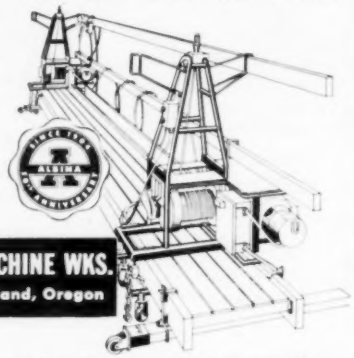
See the ALBINA



Mechanical Stirrups

To be displayed at the
WESTERN PLANT MAINTENANCE SHOW
Pan-Pacific Auditorium
JULY 13-15, 1954
Booth 602 • Los Angeles, Calif.

• We want you to see Albina Mechanical Stirrups in operation. You can judge for yourself the smooth, safe operation and the savings it affords you. Units are electric or air operated and may be used as a single stirrup. Circular models also available for tanks, stacks, etc.

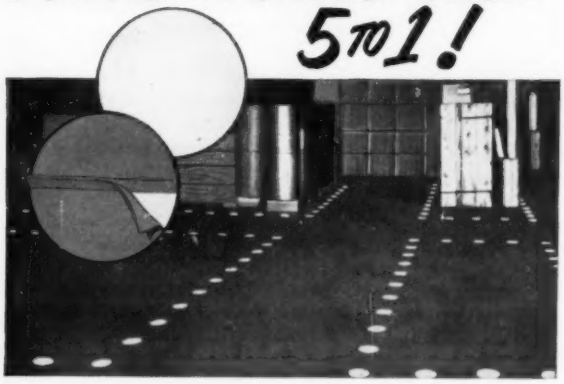


ALBINA ENGINE & MACHINE WKS.
2100 N. Albina Ave., Portland, Oregon

(For full details, use Key # R-5 on free Inquiry Card on page 77)

BRADY DOTTED LINE AISLE MARKERS

OUTLAST PAINTED LINES 5 TO 1!



NEW self-sticking Brady Aisle Markers cost less to buy, apply and maintain than any other aisle marking method. Stick instantly to clean, dry floors. No moistening or machines needed. Make straight or curved lines anytime without disrupting production. No one waits while paint dries. New, special plastic construction resists abrasion, dirt, acids, oils, most solvents. Stocked in four vivid colors and sizes; specials to order. Write today for literature and usable FREE SAMPLES!

WIRE MARKERS
SPECIAL MARKERS
AISLE MARKERS
PIPE MARKERS
SAFETY SIGNS
MASKS & STENCILS
PRINTED ROLL TAPES

MANUFACTURERS OF SELF-STICKING PRODUCTS

W. H. BRADY COMPANY

724 West Glendale Avenue, Milwaukee 12, Wis.

(For full details, use Key # R-6 on free Inquiry Card on page 77)

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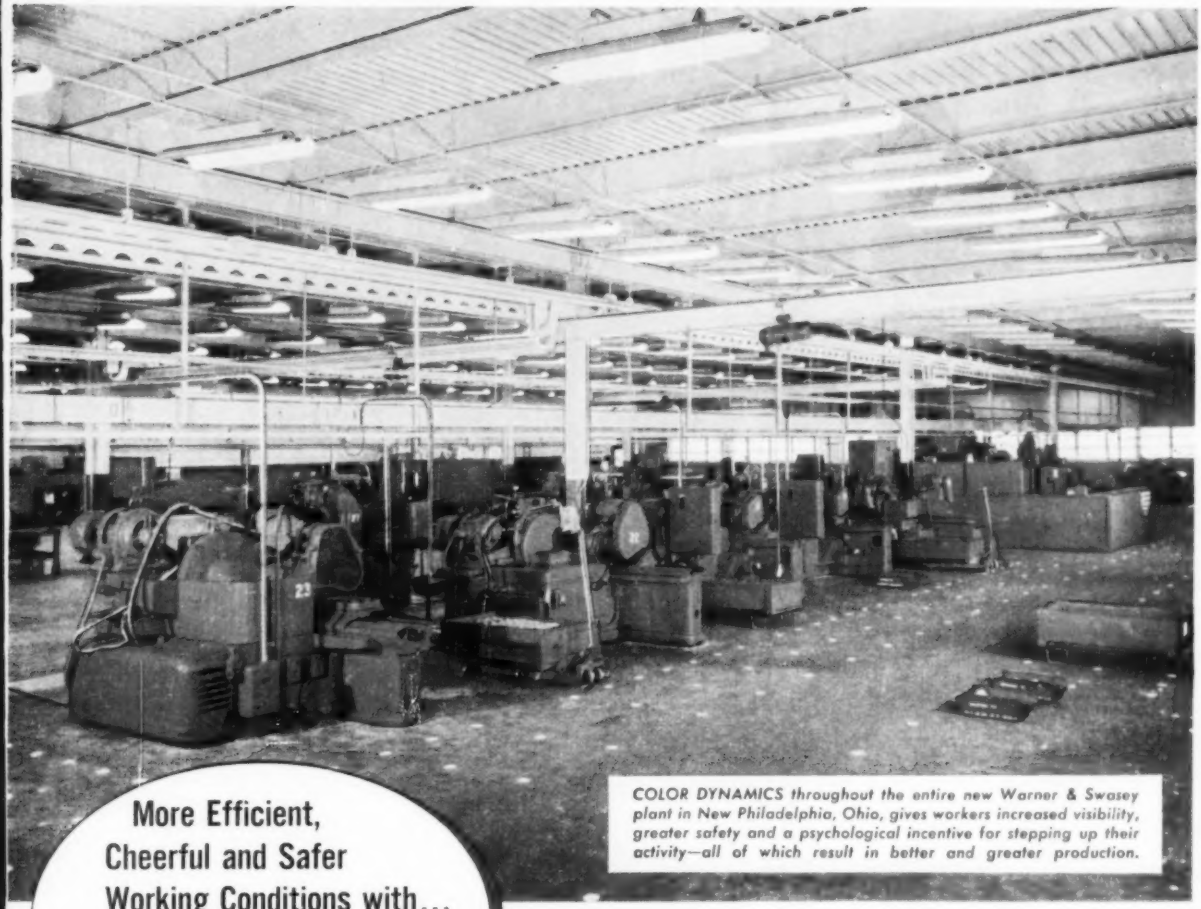

COLOR DYNAMICS throughout the entire new Warner & Swasey plant in New Philadelphia, Ohio, gives workers increased visibility, greater safety and a psychological incentive for stepping up their activity—all of which result in better and greater production.

More Efficient, Cheerful and Safer Working Conditions with...

Pittsburgh COLOR DYNAMICS®

Functional use of colors lessens eye fatigue, improves productivity, boosts morale and reduces accident hazards in new $3,000,000 Warner & Swasey plant.

● **An excellent example** of the plant environment which Pittsburgh COLOR DYNAMICS provides is the new $3,000,000 plant of The Warner & Swasey Company recently opened in New Philadelphia, Ohio.

● **In this new plant** Warner & Swasey manufactures parts for turret lathes, automatic screw and tapping machines, textile machinery and grading equipment. The entire structure was painted according to COLOR DYNAMICS.

● **The reasons for the choice** of COLOR DYNAMICS are best expressed by Walter K. Bailey, vice-president in charge of manufacturing:

● **"We chose to use color** functionally in order to create an environment that would be pleasing, cheerful and, at the same time, improve the productivity of our operators. We selected colors that would increase visibility without causing eye fatigue.

● **"We also painted** recreation and rest areas in colors that would provide a welcome change of pace and return the workers to their jobs feeling alert and refreshed.

● **"Above all,** we wanted to create a work place of which the entire community could be proud. How well we succeeded is best shown by the enthusiastic comments when we held 'open house' at the time of our opening. This was further confirmed by the flood of applications from men who wanted to work in these surroundings. From every standpoint, we believe COLOR DYNAMICS is an investment that will pay off for years to come."

FREE—Color Engineering Study of Your Plant!

● Why not test the practical value of COLOR DYNAMICS in your plant—on a machine or two or in a whole department? Send for our free book which explains how you can use this modern painting system simply and easily.

● Better still, call your nearest Pittsburgh Plate Glass Company branch and ask to have a representative give you a detailed color engineering study of your plant, or any part of it, without cost or obligation. Or mail coupon at right.

Send For a Copy of This Book

Pittsburgh Plate Glass Co., Paint Div.
Department SMP-54, Pittsburgh 22, Pa.

☐ Please send me a FREE copy of your booklet, "Color Dynamics."

☐ Please have representative call for Color Dynamics Survey without obligation on our part.

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PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

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EST. 1901

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AMERICA'S PIONEER MAGAZINE IN ITS FIELD

SAFETY MAINTENANCE & PRODUCTION is indexed regularly by Engineering Index, Inc., New York

the first nylon mesh safety shoe

built to work shoe standards

Stock No. 1621 A

Just as cool but
DOUBLY STRONG—
NYLON MESH *lined*

We have had no confidence in the *unlined* nylon mesh shoe for strength or safety — and so have never featured it. Now we offer a mesh oxford that's lined as a safety work shoe should be—***but lined with nylon mesh itself!*** It's just as cool and breezy as an unlined mesh shoe. But the double thickness of tough nylon strands is fully as strong as the ordinary thickness in leather. No man is taking a chance with his feet in wearing it on the job.

LEHIGH
SAFETY SHOE COMPANY
ALLENTOWN, PA.

GENERAL OFFICES:
shipping and receiving address
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EMMAUS, PA.

(For full details, use Key # R-7 on free Inquiry Card on page 77)

It's Safe to Say

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★ GET THE LEAD OUT

NO MORE potent argument for greater emphasis on safety as an aid to production has crossed our path than an address by J. E. Trainer, Vice President in charge of production, Firestone Tire & Rubber Co., published in part by SAFETY MAINTENANCE in April. A top-flight executive in one of the country's blue-chip industrial companies certainly is in a key position to spell out the role of accident prevention in his company's production goal.

Mr. Trainer breaks down the safety crusade into three main categories: lowered direct costs such as compensation and medical payments; reduction of numerous indirect costs and, equally important, safety's positive contribution to the quality and quantity of production.

Every segment of industry knows full well that accidents and injuries cost money but too little emphasis is placed upon the fact that safety doesn't merely save something or prevent something. It also *adds* something since accidents are symptoms of something gone wrong in operation—some fault in design, equipment, arrangement, placement, training, supervision, operation procedure or practices. These basic causes of accidents, in the words of Mr. Trainer, also are the obviously basic causes of inefficiency.

From the vantage point of an executive in direct charge of operations at a colossal industrial operation, Mr. Trainer is in a unique spot to enumerate the broad factors leading to the "one best way." And that is the objective of all efficient management whether the company be big, small or average. Through broad experience, the giant Firestone organization has learned the multiple advantages of safety which brings about an immediate reduction in costly delays, lifted morale, improved employee relations by providing a non-controversial ground for co-operation between labor and management, a more highly developed esprit de corps and sense of employee loyalty.

In elaborating upon the many and varied benefits of industrial safety, Mr. Trainer emphasized that inspection programs and security devices do more than prevent tragic accidents. They also detect unsafe conditions that would cause equipment breakdowns and thus jeopardize production.

It has been said that safety is but another name for efficiency. By this time, it should be obvious to all concerned that safety records are not achieved unless industrial operations are carried forward in the *right* way—the *safe* way—the *efficient* way. Just as every industrial employee required training in the proper use of any tool so must the supervisor instruct and train each worker to do his job in the correct, or safe, way which will prevent accidents. This will result in fewer damaged machines and material spoilage, less scrap and certainly in higher production, according to the Firestone official.

In these days when American labor and management must show to the world that differences can be ironed out to the common advantage of all, team-work is essential to production maintenance. Nowhere does this cooperation present a more dramatic aspect than in the safety program where all employees can be made to feel that they are part of the team. Mr. Trainer reminds us that men who work together as a team for any common cause just do not become as bitter in their minor differences as they otherwise might, lacking a mutually beneficial objective.

To help maintain production at the highest possible level of efficiency, which in turn means a better way of life for us all, we need more than just raw material, men, machinery and electric current. We need the spirit of common effort whether it be called improved morale, cooperation or team-work. In no field of human endeavor is this brought to the fore with more immediate and tangible results than in the crusade for safety.

Greater safety automatically means increased production. In the pursuit of one or the other it's time to "get the lead out." H.A.

WATCHEMOKET STAC-VENT eye SAVERS

New! WELDING GOGGLES

Soft Vinyl Frame form-fits face for greater comfort, better protection.

MODEL 492 STAC-VENT

Furnished with replaceable 50 mm round Federal Specification, glass filter lenses No. 3, 4, 5 or 6 shades . . . protected both sides by .020" thick hard plastic cover lenses.

MODEL 492 No. 5

Illustrated is Model 492 with No. 5 Shade perfectly matched glass filter lenses. Lens Holder (right) is of heavy flexible opaque plastic with lens pockets which hold lenses tight in perfect position for best vision. Lenses are easily removed and replaced. A Position Lock Bar secures lens holder in frame.

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MORE FLEXIBLE because lenses are easily changed or replaced, because lens holder is easily replaced. And Stac-Vent Eye Savers are wide enough to fit over the largest prescription frames.

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MODEL 490 — G5

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Were THEY Better in the "Good Old Days"?

By JOHN A. QUESAL *

WORTHY of all the ingenious ideas, approaches and gimmicks that can be conjured up, accident prevention is one of the greatest and most noble of human endeavors. However, we tend to assume rather smugly that the safety movement in 1954 is doing a better job than did the early advocates of accident prevention. Let's take a second look.

At one time there was a whole legion of active and enthusiastic supporters of industrial safety. Although their ranks have since become thin, the impact of their ideas and their techniques has had a profound effect. They built progressively and for the future, developing precise and proper tools for accident prevention and setting up desirable patterns of job performance for others to follow. They were the architects for our safety craftsmen of today.

Unfortunately, the craftsmanship needed to employ these tools to the fullest intended use is manifestly inferior. There is a serious decline in the quality of the results.

This controversial article does not necessarily represent the viewpoint of SAFETY MAINTENANCE. Nevertheless, as pioneers ourselves, we invite comments in response to the views expressed by the author since constructive controversy is the life-blood of this independent publication. Editor.

* The author is Director of Safety Service for a leading state insurance body.

Of course there is some acceptance and application of proved techniques, but a leaden complacency characterizes the conduct of too many people who should be producing better justification for their place in the safety movement. I, for one, am concerned about it sufficiently to declare right here, in blunt words, if you will, that today's crop of safety men as a class should get the lead out. More accidents CAN be prevented, and in the march against them, today's safety men are not as effective and do not compare in stature of performance with the old timers.

This is not a hit and run declaration of fault finding without a purpose. My contention will be supported and there will be con-

(Continued on next page)

The "Good Old Days"

(Continued)

structive criticism and the course pointed out for the possible awakening of a slumbering potential.

The full field of accident prevention presents a broad subject. Generalization would make for less effectiveness. Accordingly I shall be specific. Obviously a discussion of all facets of safety enterprise cannot be properly contained in one single article, so I shall begin with a fundamental which ranks prominently in the commandments as a most potent weapon against accidents and injuries. We will later handle other phases for comparison, if need and interest demands or if some militant defense develops and the publisher's courage holds out.

For the kick-off, we will here discuss an ancient safety action, one which predates civilization itself. That is the fundamental of Inspection for Hazards. Its importance in the blue-print of survival is indicated by the fact that, as an action, it has been built into the lower animals and even in plant life by a Supreme Architect. We all know that dumb creatures are always inspecting for hazards instinctively.

In the low mentality era of the cave dwellers, there were definite hazards to survival. Mortality tables are unavailable, but we do know that cave dwellers were able to reach an age of maturity and could have benefited from the services of a barber! They too had to inspect in order to survive. In selecting a shelter, a cave with a view must have been desirable, not so much for class or social status as for basic safety. They could then observe and be prepared for marauders who might be approaching stealthily to appropriate a mate by the simple hair-drag method of the time.

Inspection for excessive overhang outside the cave entrance must have been a common practice. A landslide, either by accident or by deliberate intent on the part of a rival, could seal off the cave, transforming it from a home into a tomb. The ceiling of the cave also required inspection for loose or scaling rocks that might endanger the occupants.

In our own era of American civilization, "Inspection" has the historical distinction of fathering the whole planned safety movement. In 1867, by statute, the first American plant inspectors, as such, were appointed in Massachusetts. The horror of the accident toll due principally to mechanical equipment justified the law and made inspections mandatory.

That was 87 years ago, two years after the assassination of Abraham Lincoln. Our 17th president, Andrew Johnson was in office. Dwight D. Eisenhower is our 34th president. Plant safety inspection was therefore born in the mid-American era.

The last half century saw the precise techniques developed and the tools placed into the crib for issue to whatever good artisans might emerge to use them. The National Safety Council had its 40th Anniversary in September 1953. I became affiliated with industrial safety shortly after the founding of the Council and have been "exposed" to it ever since. This is mentioned merely to lend authenticity to my words.

Pioneers made our country great. Safety pioneers labored in rugged times under extreme conditions which in comparison with the plush approach of today should be convincing evidence that an indictment is due so many of today's lilies of the field.

The daily work shifts of the plants with which many were connected yesterday required that safety men work 12 hours a day. Such shifts were common. It is significant that fatigue actually became an accident factor of real proportions and a subject for critical and continuing study with the advent of the 8-hour shift.

THIS is what the safety pioneer had to contend with: unguarded belts, poor lighting, and little ventilation, but . . .

Mechanization was the order of the times and manual methods had to yield consistently. Machines were being designed and built to perform every manner of function and operation. Thought for safety of operators was given meagerly, when given at all.

Machines crushed, squeezed, and dismembered. Gears, rollers, belts, pulleys, shafts and sprockets transmitted the power to activate the machines, but they also inadvertently functioned as horrible traps. It was not unusual that blood had to be cleaned up in order that interrupted operations might be resumed following some brutal incident that was referred to as an

"accident." Today, you find a contrasting humanitarian impulse that makes the task of those responsible for safety easier.

Upon entering a machine department of the past, you would behold a whole jungle of moving belts, mostly vertical, running askew in every direction from a maze of shafting, couplings, and pulleys. The prevailing gloom was lightened here and there by an occasional dangling light bulb. These bulbs were usually naked, emitting a harmful glare, except where some workman in self-defense had fashioned a shade of sorts from heavy paper that soon became charred from the heat of the bulb and not only threatened to erupt at any moment into flame but often did.

As though to devour every inch of space, there were engine flywheels and pulleys of such mammoth size that a bridge structure had to be built to provide passage between the upper and lower runs of the belts. These belts ran freely through aisles, through partitions, floors and building walls to drive equipment remotely located without devices for an emergency stop.

Bare, high-speed shafting revolved under machine tables or was suspended overhead at unsafe heights where it could manage an occasional scalping or worse. The length of skirts, sleeves and tresses contributed to the regularity of accidents. Ominously, as though to anticipate future inaction, hair and clothing became accommodatingly shorter and safer through sheer evolution of style.

The forerunner of the conditioned air and controlled comfort that we take for granted today was that atrocity consising of propeller-like blades collared to a line shaft. The idea was that the air was fanned vigorously as the shaft revolved. Usually the pattern of the spinning blades or the feel of the air current were the only safeguards. Contact with the revolving blades could bat a body out of the room, but that consideration was secondary.

With the fantastic conditions which prevailed, and only partially described here, it is not difficult to see that the predominating accident cause was simply a mechanical one.

. . . HOW much easier is accident prevention in the modern shop with its neat housekeeping, uncluttered aisles, and good lights?

Contrast your plant of today with its direct individual motor drives and resultant absence of shafting, belts, and pulleys, its scientifically planned illumination, its guarded machine parts frequently originating at the design board before shipment and its conditioned air and favorable general surroundings. These improvements in a few years were brought about through much endeavor and not without a share of discouragement in the process. The safety pioneers effected the almost total elimination of injuries due to mechanical equipment and that is a job well done. Persistence began to win compliance, guards began to appear and with them a consciousness of their use and need. First guards were crude and home-made, often constructed from old packing cases and scrap material, but they afforded a measure of protection until better ones developed to replace them. However, too little ingenuity has gone into many types of guards on the market today as compared with the original, basic designs.

Before going any further, I would like to clarify what I mean by "Inspectors" and "Inspections." The former refers to any single individual acting for himself, for a specific plant safety program or, for a recognized group. "Inspection" relates to the action of the inspector.

There is a growing tendency to find inspectors unwelcome in certain departments, sites and establishments. This is unfortunate, though in the main deserved. What used to be an indisputable art has, in careless hands, been allowed to deteriorate into token visits which became wasteful of time, then consistently non-productive, and finally unwelcome, resented and resisted.

The old and honorable root of this art makes it worthy to again become a most dynamic force for good. Safety and efficiency go hand and hand. A few realistic examples will serve to demonstrate that a revitalized type of inspection can be so thoroughly productive that persons with authority will no longer resist inspection. Not only will individuals avail themselves of inspectional efforts but they will seek them out.

The classic tale of good inspection procedure concerns the boy who came upon the heavily loaded truck stuck solidly in a railroad underpass

(Continued on page 26)

RIGHT—(next page)
Wooden horse used for stringing blasting wires over electric shovel cables on ground.

RIGHT—(this page)
Large wooden horse is used to support electric cables as they cross roadway to shovels.

How we meet our CRUSHED ROCK

By CLARENCE F. STETSER
General Superintendent
New York Trap Rock Corp.
Newburgh, N. Y.

FROM start to finish of the company's operations, all workmen are provided with the safety gear normally found in industrial operations. In addition, the company provides special protective devices and methods to fit the individuality of each operation.

Hard hats with liners for winter and chin straps to prevent the wind blowing them off, eliminate two well-known excuses for not wearing hard hats. Safety shoes are worn by all well-drilling men; indeed, by all company personnel with the exception of truck drivers. To date, the company has not tried to sell the latter on the idea of wearing safety shoes because our experience does not indicate that they need them. However, the company maintains a supply of safety shoes in the storeroom for anyone who wants them, assuming 25 percent of the cost of the shoes, plus handling costs.

Gloves are provided to all employees on an exchange system. No new gloves are issued without the return of the old pair. A signed requisition is also necessary. To promote the use of safety goggles the company supplies prescription safety goggles to all employees who need corrective lenses, the company assuming the cost of the doctor's examination as well as the cost of the goggles. A supply of regular goggles is kept in the storeroom for all employees. The only requirement to get a pair is a requisition from the employee's foreman. Regular linemen's safety belts are worn by well drill operators whenever they have to climb the drill rigs for repairs, adjustments or greasing.

Special Precautions

A safety interlocking switch has been installed at each well drill power pole which prevents the men from plugging in the cable when the power is on. The switch has to be in the "off" position before the connection can be made or broken. A lock-out system has been provided for the main line switch of the electric motor so that the power motion can be locked in an "off" position before repairs are made. This system was adopted after a serious accident on one of the drills, when the oper-

RIGHT—
Well driller uses safety belt when he climbs on well rig to make repairs.

FAR RIGHT—
Power cables used on electric shovels are moved with insulated hook attached to insulated cable clamp.

HAZARDS

ator and helper misunderstood one another's signal. The lock is kept fastened to a piece of light chain that is long enough to reach the switch when needed.

Night operation of drills and their somewhat distant location from each other, as well as from the plant, have produced a unique warning device to summon help in case of emergency. Each well drill is provided with a Very pistol loaded with a parachute-supported red flare. The flare is shot into the air and another red flare is stuck into the ground to indicate the exact spot where help is needed.

Following drilling comes blasting. One of the safest blasting agents known to the trade is used; but, nevertheless, men are taught to adhere to all the safety rules they

(Continued on next page)

Portable concrete shelter protects helmeted blaster against explosion.

Chained key and lock provide lock-out system on well-drill main switch.

ABOVE—Plexiglass windows on shovel protect operator against flying stones.

LEFT—Well drillers wear hard hats, safety belts and shoes. Also note chin-straps to keep wind from blowing off hats and overall-pantlegs tied near their shoe tops.

would use in handling any explosive. Primary blasts are of the delayed action type. Primacord is also used in the holes. Two down cords are used in each hole in case one is severed. The caps are attached as the very last part of the operation. After the wiring has been laid out, connected and tested, an extra set of caps is fired, some distance from the priming. This dry run procedure is a dress rehearsal of the real thing, giving the crew an opportunity to test the blasting switch and the wiring system. An inspection is made after the dry run to make sure all the caps have been fired, and another set of caps is made ready for final attachment.

In order to prevent a second cycle of the delayed action switch, both wires of the electric supply are interrupted. This is accomplished by connecting caps to wires going to the delayed action switch. These caps in turn, when fired, will detonate short lengths of priming cord around which the common wire and main source wire have been coiled. When the cord has been detonated the wires are blown apart, breaking these connections and making it impossible for the cycle of the delayed action switch to repeat.

Warning Signals

In both primary and secondary blasting a signal system is used, consisting of signal lights, sounding bell, and siren. For a primary blast four blasts of the siren are sounded and a period of four minutes is allowed for proper clearance of personnel before the shot is fired. After a reasonable time one blast of the siren is sounded which denotes the all clear signal. For secondary shots three blasts of the siren are sounded and a three minute interval is allowed before the shot is fired. The signal lights, and the loud sounding bell which rings continually during the waiting period before each shot, are so situated on the main road that they stop all traffic to the quarry at a safe distance from the blasting areas. This blasting signal procedure is similar in all company plants.

Continuing through plant operations, we come to the loading of haulage units. This is chiefly done by large mechanical shovels powered by electricity. The main source of power is carried to these machines by portable trailer cables carrying 2300 volts. The cables are some 700 feet in length to allow frequent and lengthy moves by the shovels without requiring a move of the cables to a new power outlet. Four cables of equal value insulation and cross-section are used. Of the four cables, three are used for the power and the fourth is a grounding conductor which is attached to the metallic parts of the shovel and also to a network of overhead and underground grounding conductors at each pole outlet.

The shovel crews are provided with metallic hooks with wooden handles, the metallic part being covered entirely with a rubber hose. These hooks must be used whenever the cables have to be moved. Approved rubber gloves are also provided. The shovel operators are protected by wire screen shields to keep out flying particles, while handling the rock. Plastic windows supplement the screen shields during inclement weather. Whenever climatic or other conditions cause part of a bank to stand up very high every means is taken to correct the condition. Shovel crews are trained to report any unsafe condition and are allowed and encouraged to move their machines to a safer location.

In loading the semi-trailer hauling units at the shovel, the drivers are required to leave the cab and move to a safe distance, clear of the possibility of being hit by falling or flying stone. In turn, the shovel operators are required to allow the drivers ample time to get into the clear before swinging the bucket over the trailer. Continuous efforts are made by pitmen and road patrol personnel to keep the roads clear of fallen pieces of rock. Drivers are encouraged to report any mechanical faults in their trucks to maintenance. A proportionate number of spare units is always on hand so that a truck may be retired temporarily for repairs without interfering with the efficiency of production. Safety and operating efficiency go hand in hand, in this, as in other operations.

Secondary drilling is inherently a hazardous operation. Drillers are provided with hard hats, safety shoes, gloves and eye shields. The men use them conscientiously and they eliminate a large number of serious accidents. At the primary crusher the men are given suitable guard rails and other mechanical devices to protect them, as well as personal equipment. Throughout the mill buildings and other work areas the mechanical protective devices and guards are plentiful and kept in good condition. Every lubrication point has been studied to make it safe and efficient. All conveyor belts have been studied to locate any hazards and to properly guard them. All tail pulleys, and those not generally regarded as hazardous, have been amply guarded and protected. All under and over passes have been provided with proper stairways, hand rails and head room protection. The pinch points of belts and pulleys have been considered as hazardous. Many of these have been carefully protected and there is a continuous program to eliminate all such hazards.

Although noise is not always considered a hazard, the employees of the company who work near vibrating screens and crushers are provided with approved ear plugs.

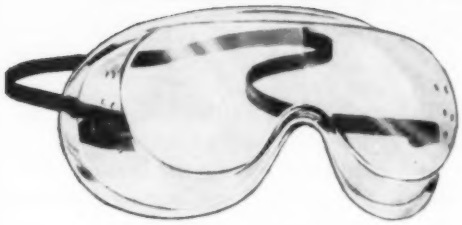
Materials handling devices such as cranes, jacks, lifts and hand trucks, coupled with proper training of workers in the methods of slinging and rigging eliminate many personal injuries. The use of degreasing solvents for cleaning parts of machinery being dismantled and repaired is a complex matter. The company has discontinued the use of gasoline and makes every effort to put the modern solvents to use. However, care must be taken with some of them, since individual reactions of personnel using it vary, and severe dermatitis is possible.

The use of electricity is another area of considerable hazard. The

(Continued on page 25)

Practical Plastic Protectors

WELSH LOW COST EYE GUARDS



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- Metal Frame Spectacle Goggles
- Acetate Spectacle Goggles
- All Plastic Safety Goggles
- Fog Free — Dust Free Goggles
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More Than Elbow Grease!

Floor Maintenance, like all cleaning today, needs proper methods and management planning much more than back-breaking labor. A travelling clinic shows how a little intelligent paper work can lower cost and increase quality.

FOR some time now, rising operating costs have been playing havoc with industrial cleaning. Sanitation men have worked harder and struggled gallantly to keep up with their increased tasks. Rapid-cleaning machines have been thrown into the fight, and still costs rise and quality doesn't keep pace. Why? Everybody is trying hard.

In some areas of the struggle, some companies are meeting their cleaning problems, solving them, lowering costs, increasing the speed and quality of the job. They don't seem to be working up a sweat doing it either. What's the secret? Well, it's not a secret . . . in fact, the "secret" is being let out all over the country by a travelling sanitation clinic. (See SAFETY MAINTENANCE for October, 1953).

To sum it up simply, the secret is organization . . . using new techniques where they fit, abolishing inefficient practices, using scientific work load and standards guides, giving responsibility to the sanitor and supervisor, and keeping the entire program under control through exact work measurements, inspections, and accurate accounting methods. According to a check list, put out by the clinic, any maintenance program is a number of programs within a program. The list consists of a standards system for all operations, a work output program, a cost control system, a quality control system, supervisory development program, a sanitor development program, and a management development program; as well as, a program for work tools development, a personnel participation program, and a preventive sanitation program.

The clinic, besides its one-day educational and discussion programs, also makes available to those attending the programs a cost control work kit, containing 29 different forms, (don't groan) all extremely useful in the establishment and management of a successful sanitation program. Their most important feature is that, properly used, they enable management to tell with ease exactly where a program is in relation to all factors at any given time.

Sanitation Factors

It is possible, by using one form, to rate an individual program against the national average. According to the clinic, the sanitation factors which are closest to reaching maximum efficiency are supplies, architectural adaptation to good maintenance, personnel participation, supervisory effectiveness, and organization of attack. The factors farthest from their potentials are research and communication of the maintenance program to management. Sanitor development, management support, and departmental support also rate very low, nationally.

With another scoring sheet it is possible to rate cleaning products on performance, labor saving value, safety to personnel and surfaces, and deterioration. Numerical assessment is provided and when related to the cost per unit of coverage enables the user to give the product a value rating.

Maintenance charts, showing simple but important points to check to keep floor cleaning tools in repair, are also part of the cost control kit. For floor machine care they illustrate such things as checking for frayed wiring, keeping an inventory of repair parts, placing the brush on the machine by hand, resting the machine on its wheels when not in use, keeping tank clean, valves and lines tight, and having an electrician check the motor frequently, and not tinkering with it when unqualified. Floor machine brush care covers hanging the brush on the wall or laying it flat when not in use, combing the brush frequently, choosing the right brush for the job, refilling steel plates when worn, washing wood-blocked brushes occasionally without getting the block wet, and of course being careful not to use defective brushes or attachments.

Floor brush care includes rotating the brush frequently on the handle, labelling the handle with the place where it belongs, hanging the brush up when not in use and not leaning on it when using it, combing the brush frequently, and keeping it dry. For dry mops a chart suggests hanging up when not in use, washing heads in lukewarm, mild soapy water with a thorough rinse, replacement of torn tie cords, choosing a dusting head of proper size for the block or frame, and refraining from using it on wet or oily floors.

Wet mop care illustrates rinsing after use, rinsing and hanging for drying with yarn away from the wall, storing wet mops out of contact with other equipment, using mop with care on rough wood floors to prevent catching strings, replacing worn mopheads, using old mopheads for oily dirt, and squeezing and twisting the mop with care. Wringer and bucket care emphasizes using the proper size for mop

FEATURE

Second article of a feature series on Maintenance Problems. The next articles will appear in the June SM & P.

size, clear-water rinsing after use, keeping wheels replaced and in repair, also parts oiled and tight, keeping foreign matter out of the wringer, and not lengthening handle of press type wringer, or using too much force on wringer lever. Another diagram shows construction details of a supply cabinet for the individual sanitor.

Heart of the efficient maintenance program is the determination of the proper work load. Once this has been accomplished, the cost of the program, the number of men needed, and the time required can be accurately estimated. A standard time list, which establishes cleaning rates for all operations, and a series of output charts for specific floor cleaning operations are included in the control work kit. Standards on the charts have been compiled from actual operations and are subdivided sufficiently so that it is possible to find the average rate for using a wet mop for cleaning a small, difficult of access area, or the average time required for scrubbing a large area with no obstructions with a floor machine. Using these charts and the time list a supervisor can check the standard time against the time it actually requires for his operation.

A natural corollary to these forms is a process sheet to determine the type of cleaning operation in a particular situation; and, by referral to the previous charts, the approximate time needed. From this the supervisor can prepare a work schedule (for which a form is also provided) which will enable him to distribute the work load fairly among his men, yet give each a full day's work.

To sustain the daily efficiency of the maintenance program a correction memo, which both the supervisor and the sanitor sign when the condition is corrected, is useful. Also, of course, a supervisor should have a daily check list to assess the quality of the work in various areas, whether the work is on schedule, how his men are operating, whether supplies and equipment are in sufficient quantity, and fitted to the job. Such a check list is provided in the clinic's work kit.

An inspection rating form, giving a numerical grade to such elements as cleanliness, order, repair and finish to floors, equipment, walls, ceiling, and windows and lighting fixtures, is available for determining the quality of work. It is subdivided into possible errors and comes in duplicate forms, color-rated for easy assessment of quality, even when filed.

Much emphasis in the entire program suggested by the sanitation clinic is placed on the position of the sanitation supervisor and his relations with management above and his personnel below. A form is provided so that he can rate himself on the job he is doing, to discover where he is doing the best and where the poorest. There are sufficient divisions in the form so that he need not be confined to making generalizations about his work, such as "good" or "fair." The general divisions of planning, execution, and follow through enable him to admit a mistake or confirm a success without losing a sense of proportion.

The supervisor also can use a chart to rate his personnel and award them with incentives. He doesn't have to rely entirely on his own powers of observation either; because he can give each sanitor a work routine sheet, to be given back to him, which shows what the man did and how long he took to do it.

When the supervisor reports to higher management he has enough information in black and white to enable him to deal with their questions in the terms they know best—dollars and cents. He can show simply why such and such costs as much as it does, why buying something else will cut costs, and how his program stacks up against others as well as against itself. By planning and organization the floor maintenance and sanitation programs of any plant can be removed from the red haze of inefficiency into the quiet black of smooth-running usefulness.

A free Sanitation Cost Control Work Kit may be obtained on inquiry to the editor.

Illustrative material by courtesy of Cost Control Clinics.

Quiz Promotes Safety

AS a means of promoting safety, the Jos. S. Finch & Company distillery has adopted a format popular on television and radio quiz shows. Capt. Fred T. Boylstein, safety director conceived the quiz-type promotion.

Each month a new safety slogan is posted on the plant's bulletin boards. All employees are urged to put the slogan into practice and to write it down on paper to be kept alongside their telephones at home. Then sometime during the month the names of several employees are secretly drawn at random and the Personnel Department telephones their homes, asking the replying member of the family for the exact wording of that month's slogan. The calls continue until six correct answers are obtained, with each winner being sent a cash award. Names of all those called—winners and non-winners—are then listed on the bulletin boards.

Has the contest accomplished its objective? "It certainly has," says Capt. Boylstein. "Our employees and their families have become more safety-conscious than ever, and since the contest began the plant has operated over 1,000,000 man-hours with only one chargeable accident. We recommend it highly to other firms and organizations seeking new forms of safety education for their people."

I Have Nothing to Unlearn

SINGLE young man, 27, draft exempt, holding industrial safety certificate, N. Y. University Center for Safety Education; B. S. Business Administration, desires entering safety field. Willing travel or relocate. Formerly industrial audiometric consultant for noise control.

Won't someone gamble on giving me the experience that this field requires?

Box 454, % SAFETY MAINTENANCE, 75 Fulton St., New York 38, N. Y.

Equipment cases such as these are located at strategic points throughout the plant.

Anywhere You Look!

safety meets your eyes in this plant

PLANT employees at the Tyrone (Pa.) Mill of the West Virginia Pulp & Paper Company are very aware that management is doing its utmost to make their jobs safe. They see safety posters displayed throughout the various buildings of the mill; safety leaders, who are fellow employees, frequently point out possible hazards and how to avoid them; they receive reminders of safety measures in pay envelopes, and there are frequent safety meetings and talks to attend.

Safety office supply clerk issues respirator to worker. Safety sales and instruction talk accompany each item of equipment issued.

Safety display case in plant corridor features protective equipment sold in centralized supply room in safety-conscious paper mill.

Recently a centralized safety supply office and protective equipment store was opened at the mill. Alongside the doorway of the office there is a 3-shelf display case at eye-level to which an employee's attention is directed. Here are displayed such items as protective helmets, or "hard hats"; goggles of various types, and face shields; safety clothing and shoes; respirators, first aid kits and similar items. The displays are changed at frequent intervals.

Inside the office, the office clerk often asks the employee requisitioning equipment if he has noticed the items on display. The clerk describes them and tells when, where, and how they are to be used. If it is the first time the employee has drawn a specific item of safety equipment he is told how it should be used and cared for. Special cards, in different colors, are filled out by the office clerk. On these is entered information as to the type of equipment, the date of withdrawal and return, the employee's name and other pertinent data. These cards are filed in the supply office.

So well has the new centralized office worked out, keeping better control over equipment and selling safety with the "sales talks" of the clerks, it is reported that, based on a report of operations for its first 3 months, management expects to show savings for the first year of operation of a minimum of at least 2000 dollars. Also, reports Robert K. Meredith, Safety Director at Tyrone Mill, more safety shoes have been sold since the store opened than were sold in the entire previous fiscal year. The continuing program of safety education carried on among the mill's some 800 employees, coupled with the fact that safety shoes may now be purchased through payroll deduction rather

than by payment in full at the time of purchase, has led many employees to buy shoes.

All other items of safety equipment, except prescription goggles, are supplied employees without cost. Issue is made upon requisition, approved by supervisor or foreman, with the equipment being replaced when necessary, upon return of the original issue.

Spurred by the safety results shown at the Tyrone Mill, management has used the safety program there as a standard to be followed in other mills operated by the firm in Pennsylvania, New York, Maryland, Virginia and South Carolina.

It was 8 years ago that the present program had its inception. In the first 6 years of operation, lost-time accidents at Tyrone Mill were reduced some 97 percent, a national award being given the mill for having achieved an accident frequency rate of only .59, as opposed to one of 63.36 only 6 years earlier! During the entire year of 1952 only one lost-time accident was reported.

Another indication of the efficient working of the mill's safety program, with protective equipment purchase and control being vested in the mill's safety department, is the fact that goggle cost, which in 1945 stood at more than 2 dollars per day, has been reduced to slightly under 56 cents a day. "When we started our program," safety director Meredith says, "we didn't have eye protection. We just had a large stock of goggles. Now the men know what they are for, how they should be used, and they are taking care of the equipment we issue to them. The same is true of all other items which we issue without cost.

"The necessity of using any and all of the protective devices we supply our employees is brought home to our men in many ways," continues Mr. Meredith. "This centralized safety supply store, with its display case and the 'Sales Talks on Safety' that clerks give every employee visiting the store, has gone far towards making every man realize that he has a responsibility, which he shares with management, to take every precaution not only for his own safety, but to set an example for his fellow employees."

First aid classes are conducted for "key men" on each shift in the mill's many departments. Special teams, whose duty it is to check areas for noxious and dangerous gases, receive recurring periods of instruction. These special teams have been equipped with explosionmeters, combustible gas indicators and hydrogen sulphide detectors. Before workers are permitted to enter any tank, pit or other area in which explosive or toxic gases, or vapors, might be found, one of these specially trained men has to thoroughly check the atmosphere with the instruments supplied him. It is not until he pronounces the area "safe" and signs a report to that effect, that the workmen can begin their tasks.

A considerable number of hard hats, to protect the heads of workers, have been purchased and are in use at the mill. Provision of safety equipment of all types is not restricted solely to mill employees. Hard hats, goggles, protective clothing and, in some cases, respirators and face masks are loaned employees of outside contractors engaged in work on the mill property, who may not already have such equipment provided them. "We believe that protection should be extended to everyone engaged in work on our property," explains safety director Meredith. "Besides, it sets a good example for our own employees and brings home to them, in a little different fashion, the idea that our management is sincere in its desire that everyone should work in safety."

Pictures by courtesy of Mine Safety Appliances Co.

Weekly Award Stimulates Good Housekeeping

USING the "surprise factor" usually associated with the unscheduled visits of bank examiners, The Monarch Machine Tool Company, Sidney, Ohio, has just launched a good housekeeping drive.

Even the general foremen from whose ranks the plant inspection teams are drawn each week aren't notified of their respective assignments until the last moment: (1) Two men compose each inspection team (one general foreman from each shift), (2) these teams visit and grade the plant's 19 major departments once a week, and (3) the winning "department-of-the-week" is permitted to display a specially-designed housekeeping plaque.

A few of the things for which departments are graded each week are:

1. General cleanliness of machines and work places.
2. Platforms and pans straight and behind aisle markers.
3. Chains and ropes in places assigned to them.
4. Absence of scrap lumber, rejected parts, etc. in a department.
5. Scraps of paper and other waste deposited in proper containers.

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Crushed Rock Hazards

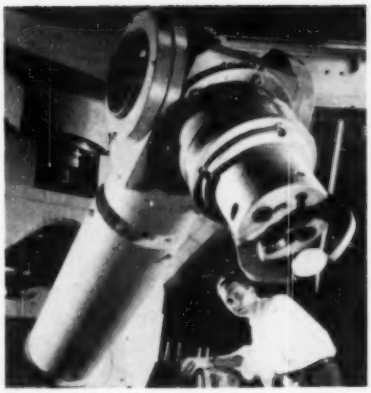
(Continued from page 16)

company has found that it is poor policy to permit untrained persons to handle electrical power or repair. This is especially true when fuses in electrical circuits are being replaced. In maintenance work on conveyors, there is always a danger of misunderstood signals. This is particularly true when several men are working on the same machine, such as belt repairmen, idler and pulley repairmen, chute repairmen and electricians. The company guards against this danger by using a device which provides for the multiple use of locks to lock out the main switch of the power source. This device permits the use of several locks on the same electric service at the same time. All the locks must be removed before the machine can be operated. There are many installations, such as automatic starters, which have push-button control, that would seem to defy application of the lock out system. However, with the application of a little ingenuity some simple and inexpensive device can be added to suit a lock out system.

Despite the company's careful vigilance against accidents, they occasionally occur. A first aid corps is therefore trained under the direction of the U. S. Bureau of Mines. This corps is selected to include men from all areas of activity so that a good cross section of personnel is available for any emergencies. These men are given a refresher course each year. We encourage and require all workers to report to the first aid office any and all injuries, however slight. Emergency first aid stations have been strategically located around the plant.

In the plant we also have a safety committee, consisting of all foremen, union stewards, assistant superintendent and superintendent. The committee meets once a month chairmanned by the safety director. Generally, the first thing discussed is the accidents encountered since the previous meeting. All accidents that cause an injury are reported on an accident investigation form made

(Continued on next page)



Steel fingers of the world's largest mechanical arm can manipulate up to 7,000 pounds, but their touch is also delicate enough to hold an egg without so much as cracking it.

Threading a nut on a bolt is easy for giant robot. Controlled from outside, it can operate in radioactive areas deadly for man.

The Gentle Giant

WHAT is believed to be the world's most powerful mechanical arm has been developed by the General Electric Company to substitute for human brawn in radioactive areas where men could not survive. Named O-Man (for overhead manipulator), the 15-ton remote-controlled giant will make possible the assembly or disassembly of large machinery by the twist of a knob or the flick of a lever.

"Push-button" operations in buildings designed to prevent the escape of radiation are necessary in certain types of atomic energy work. O-Man's operator will work through special glass windows, with the aid of binoculars or a telescope.

The new mechanical "Tarzan" has been built as the answer to the need for a device with several times the lifting power of existing mechanical arms, yet equal versatility. By comparison, if a man were as strong as O-Man, he would be able to carry 5,000 pounds on his back, lift 3,000 pounds from the floor, hold 1,000 pounds with his arm extended horizontally, or lift and manipulate a piano with his forearm and wrist.

O-Man's chief job will be to pick up heavy parts, position them and fasten them into place. It can drill and tap holes, use power wrenches, hammers, or riveters, and if need be, can handle a sheet metal saw. In a strong man test, it twisted an iron bar into a corkscrew, then for good measure, tied it into a neat knot. Although it won't be called upon for delicate tasks, O-Man has demonstrated that, with its twin steel fingers, it can whip up, slice and serve a cake or pick up and pour a glass of water.

Resembling a gun turret, the big device will operate from a crane bridge. Its vertical maneuverability will range from floor level to the height of the crane bridge. While its grip lacks the flexibility of human fingers, it otherwise possessed the same degree of motion as the human hand and arm, plus the ability to telescope its "forearm" and revolve its "wrist."

Power control is brought to O-Man via 140 separate wires in multi-festooned cable. The heart of the control mechanism is a system of 8 amplidynes, devices that provide automatic control giving smooth operation and limiting all motions to prevent damage to equipment.

Pictures by courtesy of General Electric Company.

out by the foreman in charge of the department where the accident occurred. Each accident is discussed on the basis of this report by the committee to see if everything has been done to correct the condition.

After the review of accidents there is a report from the plant inspection committee, along with suggestions made to foremen by employees. If these suggestions are approved by the safety committee and superintendent, the secretary of the committee completes a form which includes the recommendation. This form is made up in duplicate and placed on the superintendent's desk. It is sent to the attention of the foreman in charge of the department where the recommendation is made, authorizing the foreman to complete the recommendation. The form is signed by the superintendent and when the job is completed, the foreman notes the date, signs his name and returns it to the superintendent. When the superintendent receives the completed form he files it with his duplicate copy. These duplicate copies held by the superintendent serve as a follow-up by him until the job has been completed and original returned to him.

Worker participation in safety is the best way to promote safety consciousness. The reason the company has foremen on the safety committee is that they are as much responsible for the safety of their men as for the equipment in their department, as management sees it. It is the duty of the foreman to carry out the suggestions of the safety committee and to see that his men work safely. Management tries to help the foreman in his safety program by attending his meetings.

Good housekeeping has a definite effect on safety. The company tries to train its employees to consider this phase of work as a component part of their regular duties.

A plant which has a reputation of being accident-free can scarcely evaluate the prestige gained thereby, and its effect on its employees and the community where it is located.

Pictures by courtesy of New York Trap Rock Corp.

From an address delivered at the 41st National Safety Congress.

The "Good Old Days"

(Continued from page 13)

of insufficient overhead clearance. After adult discussion, trial and study had run the gamut of the usual wide range of possibilities, the perfect solution was offered by the youth in the bland question, "Why not let air out of the tires, Mister?"

Another illustration concerns a contracting job to dismantle several large steel tanks. In inspecting the site and the prospective operation, an alert inspector was able to suggest the safe way, which was a more profitable and expeditious way. Instead of planning in terms of erecting elaborate exterior scaffolding from which to perform the work, the alternate method was to build an interior floating work platform, fill the tank with water, burn and dismantle from the inside, draining the water to reduce the level to the bottom and job completion. That is also good inspection technique in action. With the primary objective of rendering performance on a job safer, the ideal situation of better efficiency and more profit accrues automatically in this example.

Many instances are possible wherein a recommendation for relocating a machine to afford safer aisle space will also provide savings in expenses of toting and handling parts in manufacture. Recommendations to install mechanical handling equipment for safety not only can eliminate the accidents it aims at but can save dollars in production costs.

There are all too many wooden stairs with worn nosings and treads in mills, factories, and basements. People stumble and fall because of the defects. Good alert inspection methods could effectively eliminate this physical hazard. The simple procedure of removing and reversing the treads would give safe walking surfaces and put defects underneath.

This is another example of the possibilities of good inspection technique. A situation which combines effective *ELIMINATION* of the hazard and permits *CORRECTION* while you wait, without the expenditure or acquisition of material, is assured of enthusiastic acceptance on the part of management and working staff alike.

Now we come to some standards that when followed by each individual inspector can transform inspections into the collective dynamic force they were meant to be:

1. Each inspector must first assess the strength of his convictions.

If you do not believe, after you have read this entire formula, that you can prevent more accidents and make renewed efforts pay in tangible measure, or bring about more safe and efficient operation, you would be doing mankind a service by withdrawing from the safety field in favor of some other enterprise where your talents will be better expressed.

2. Treat each permissible entry into busy operating premises as an exclusive privilege.

Repay such entries with productive contributions which dignify the reason for entry and expand your personal proficiency.

3. Observe the true definition of inspection, which Mr. Webster says is "to examine carefully and critically."

4. At all times bring along a good pair of eyes that are alerted not merely to look, but to see.

5. Regard all inspections as a fact-finding quest, an inventory of conditions and practices, and their normal wear and tear.

6. Always seek answers to the question, "Can an accident happen here?"

There is a personal reward for honest pursuit of self-improvement. Through vigorous, new practice and performance your imagination and inventiveness will be stimulated.

The fascination of new horizons of accomplishment are at hand. When your interest is real and active, monotony is dispelled and finally becomes impossible.

With a measure of plain talk I have hurled a challenge. It is intended to be just that. I am convinced that the old timers' pace and effort is needed—that moderns have a lot of making up to do and it is time for a surge of action. The movement needs MEN—you have been kept long enough.

EYES— FACTS AND FALLACIES

By HEDWIG S. KUHN, M. D.
Hammond, Indiana

FEATURE

Third article of a series of features on Eye Protection. First two articles appeared in the March and April issues.

THE most important things to be considered in setting up an industrial vision program, are 8 basic components of such a program. They have been worked out from the experiences of state industrial boards, teaching institutions and from practical programs. In outline they are:

1. On-the-job study of eye hazards and provision of protective equipment for each hazard.

2. Setting up of modern emergency eye care techniques in the plant dispensary.

3. Adoption of modern techniques in medical and surgical care by a consulting ophthalmologist.

4. Setting up of modern visual testing techniques.

5. Setting up of minimum visual standards on the "Eyes-for-the-Job" principle.

6. The organization of an effectively controlled ethical referral system for corrective purposes. This is the key to the entire program.

7. Study of illumination and color factors in industry.

8. Stimulation of active, professional participation inside the plant.

The implication is not that ***all*** 8 parts of such an eye program can or should be set up in every plant, although it has been done in some cases. Every eye program must be tailored. What and how much should be done, in what order, by whom, and for what purpose must

be decided. The 8 basic parts serve as check-off memoranda to measure a given plant or a given situation against its eye needs——for a modern eye protection program, for up-to-date emergency eye care, or for a modern testing program.

Survey Necessary

The most essential ingredient of a successful eye program is a survey of the eye hazards and the protective equipment suited to each hazard. It must be made by a professional consultant and the plant safety director. In this way, the consultant becomes educated in job operations and learns what eye hazards are. The recommendations of the safety man, in return, are greatly strengthened when backed by professional advice.

Once a survey has been made and a program set up, the key to success lies in the ability to stick by the policy established. A breakdown in an otherwise successful eye program may come through yielding to other types of protection suggested by someone because they are cheaper, because they are this, that and the other thing, and by pressure put on the safety man through backdoor salesmen. If the policy is worked out as a joint effort, it is greatly strengthened by this teamwork.

Service and proper maintenance of safety eye equipment is an essential part of the program. There is always someone who cannot find a screw that he has lost or who has an uncomfortable frame, and winds up carrying his protective equipment in his pocket. Finally, (and strangely enough this is again becoming a problem), there is the need to insist on government approved merchandise. Recently, a group of top management people in one area wanted to pick out fancy frames for their eye protection so that everyone would recognize the wearer of that frame as part of management. It is not only psychologically mistaken; it is also dangerous—because the fancy frame these men wanted is flammable. It cracks on impact, the screws loosen and the lens could be pushed into the eye. This affair precipitated a new problem and required approaching top management all over again in order to prove to their satisfaction, and to sell them on the idea, that they can only be protected by the real stuff; that superintendents, supervisors and assistants must show by example what must be worn by the workers in the plant.

A few years ago, I went through a plant with the union and safety committees in an effort to promote an eye program. The superintendent, who was wearing fragile, rimless glasses, came up to talk. I looked at him and said, "What are you doing, talking to me wearing breakable, rimless glasses when I am here trying to sell eye protection?" He started to flush; but when I got back to my office and phoned him, he said "I just put on my hat and am on the way over to get the right equipment."

This is essential. If you can't sell management on exemplifying their particular program by their personal use, it makes no sense to the man who is forced to wear the real thing.

One point of attack for an industrial eye program is the group of people in the plant who perhaps have never thought about eye safety or seeing and are wearing fragile personal glasses. Say to them, "Why don't you replace these with prescription safety glasses?" Usually, they will answer, "Well, I never thought about it." The next thing to say is, "Well, if you are going to invest money in safety prescription eye-wear, let's find out what you see with these glasses." Perhaps he should not use the prescription he is wearing because he hasn't been examined for 8 years or is wearing dime store glasses. Here is a chance to save two eyes with one examination—replace an old prescription with which the employee does not see well with one that gives him better vision, and see to it that he is protected from impact with case-hardened lenses.

Using the modern techniques of first aid emergency eye care is the joint responsibility of the layman and the ophthalmologist in charge. Nurse techniques, good or bad, reflect the techniques and responsibility of the consulting ophthalmologist. That is a tough statement. What are the basic responsibilities of the nurse? First, she must learn how to take a good history. How many nurses do? In fact, how many doctors take *good* histories— answering the questions—how, where, when, by whom, who did what at what hour, was it a fellow worker, the nurse or the man himself who attempted to remove the foreign body?

Proper Care

The nurse must, if at all possible, take an accurate acuity record before she puts drops in a patient's eye. She must check his vision before anything is done. We have to teach nurses how to inspect an eye. Dreadful as it may seem one nurse squeezed out the contents of an eyeball in her eagerness to see the injury. There was a cut across the cornea, the pain and spasm of the lid was such that she had to use a good deal of force to get the lids open, and just like a grape, the contents of the eyeball popped out. A nurse does not know that this could happen unless she is taught how to look at an eye and to anesthetize it when there has been a flash with terrific spasm, by putting a drop in the corner of the eye until it seeps in and some of the spasm is relieved. If she does not know this procedure she cannot properly take care of flash cases or even see if the injury is a flash. Many so-called flash cases, especially one-eyed flashes, are not flashes at all but foreign bodies or infections.

The use of sterile equipment on the eye tray in the plant has been emphasized recently by the change in the types of eye infection. A sterile medicine glass with a sterile dropper must be used for each and every patient. The anesthetic solution is dripped into the glass from the bottle on the tray and the sterile dropper taken from a pan and used until the nurse is finished with the

patient. The nurse in charge should wash her hands between cases. This is not insisted on, however, if the nurse uses a separate sterile dropper and separate sterile medicine glass for each case.

The dangerous bacteria pyocyaneous is again becoming a hazard. This, because of the promiscuous use of antibiotics in the eye, has suppressed other bacteria. This is a contamination that must be headed off and it cannot be unless a sterile technique is used in treating the eye. An eye tray does not have to be sterile in the sense of a surgical tray. The contamination can even be in the ophthalmic solutions so that extreme vigilance in culturing eye solutions is more essential than ever. Epidemic keratoconjunctivitis (EKC) was easily carried in this way during World War II in plants where eye trays were improperly used.

To remove a foreign body nurses should, of course, use only an applicator wound with cotton and should be taught a regular technique of removal by the consulting eye man. It is of particular importance to teach nurses to refer to the ophthalmologist *immediately* any man who reports being struck by a foreign body while grinding, hammering, or chiselling, even though nothing can be seen in his eye. Sometimes, such cases are the very important intraocular foreign body cases which the surgeon needs to see right away, not 48 hours later.

Visual Skills and Testing

Visual skill and visual testing programs no longer include the obsolete wall chart. There are classes where a man can learn to memorize every known kind of wall chart both backward and forward so that when he goes to get a job in a plant, he can be admitted with the record showing him to have 20/20 vision in each eye, while actually, he may have one blind eye.

The last 10 years have seen the establishment of visual testing instruments that test, in a battery, 5 skills

(Continued on page 68)

Highlights of New York's

SAFETY CONVENTION

GADGETS galore in the battle against accidents were shown at New York's 24th annual Safety Exposition held in conjunction with the Greater New York Safety Council's convention last month.

James L. Devine, exhibit chairman, said the multi-million dollar accident prevention industry had produced more new devices and improvements on standard items in the past year than at any time since World War II. The industry has concerned itself not only with reducing accident hazards but in making life more comfortable and survival more likely for those involved in accidents.

Among the thousands of accident prevention devices and aids on display in 118 exposition booths were: a "traffic slide rule" which determines, from the skid marks at traffic accident scenes, the speeds of the vehicles involved; a testing device, which uses sealed-beam headlights and simulates actual highway conditions, to determine and train a driver's ability to recover from glare and his ability to see while driving at night; driver-training devices; an underwater breathing device; dozens of new types of safety shoes; safety door locks for pressure vessels making it impossible for them to pop and splatter their contents; transparent machine guards enabling the operator to see with safety every detail of the work performance; spark resistant safety tools of beryllium, and spark deflectors for those who work with tools or machines that throw sparks; new types of face shields; new solvents with lower toxicity and a lower flash point; all-weather first aid kits; a lightweight safety work hat specially designed for linemen and electrical workers; a new "hard hat" for construction workers that looks like a baseball player's cap; gas detectors; floor coatings to dissipate static electric charges—an invention of great importance to industry, explosive plants and hospital operating rooms; new kinds of non-slip floor coatings that take high polish and many more.

As new processes are integrated into industrial operations new and improved protective products and equipment enter the market. Among thousands of other new devices or improved products were goggles that stress increased comfort, ventilation and wider vision; skin cleansers for heavy duty workers that cut out

absenteeism due to dermatitis; fire extinguishers that squirt further and with greater pressure than ever before, using new vaporizing liquids; new "killer" chemicals that annihilate millions of bacteria; untippable ladders, and especially designed stretchers for the rigid transporting of victims of mine or sea accidents.

There were daily demonstrations also of psycho-physical tests for driver's reactions to emergencies; visual acuity and depth perception tests; and a new set of multi-stereo tests, which took five years to develop and can be given in two to three minutes, of an individual's ability to judge distances. The new tests will be used not only for motorists but also for crane men, lift fork operators and others whose safety or efficiency depends on ability to gauge distances quickly and accurately.

As evidence of the relationship between safety and the country's basic military strength, Emile F. du Pont, director of the Du Pont company's employee relations department, told the convention's dinner meeting that accidents of all sorts last year "cost our economy more than 9 billion dollars, representing nearly a quarter of our budget for national defense. We simply cannot afford such an appalling waste of manpower and resources if we are to maintain our strength and preserve our world leadership.

"Available statistics show that two-thirds of all industrial injuries occur in businesses with fewer than 100 workers", Mr. du Pont said. "The accident frequency rate is more than double that of larger companies. The employer of a 25-man shop is likely to feel pretty good if he gets through the year with only one time-losing injury. What he fails to realize is that the equivalent safety performance in a plant employing 5 thousand workers would mean 200 time-losing injuries. If safety is demanded by top management and if it is considered importantly in a man's performance record, there is nothing in the world that can stop it from being emphasized all the way down through the ranks to the newest employee."

Without a full time safety director or elaborate organization, the small industrial plant, shop or construction project can carry out a complete safety program, the convention was told by H. W. Heinrich, assistant superintendent of the engineering and loss control division of a leading insurance company.

"Every small plant without exception," said Mr. Heinrich, "can and should have an effective safety program. The answer to the expressed fear of its cost, personnel, complexity, and paper work lies in adaptation—in other words, utilization of all of the principles of accident prevention in modified form, suited to plant size and circumstances. The small plant program must have direction but not necessarily a full time safety director. It must have surveys and accident investigation but not necessarily committees and departmental meetings. Principles and objectives remain unaltered but details of procedure may be modified."

Enforcement Important

Leo R. Nuhfer, safety director of the Peoples Natural Gas Company, told the public utilities session that enforcement was "just as real and just as important as education and engineering" in any safety program. Insisting that penalties, such as loss of pay or job suspension, must be applied equally to infractors of safety rules—"not only to the wage earner, but to Supervision and Management (personnel) as well"—Mr. Nuhfer said any other type of enforcement "doomed to failure" the plant safety program. He said also that enforcement must be carried out by Management and not the safety department.

W. T. Rogers, safety director of Ebasco Services Inc., described the safety achievement award system of his organization, on its 46 current construction projects. On each project an annual injury index is computed on the basis of accident frequency and severity and compared with a national injury index for the construction industry. A project must be at least 25 per cent below the national construction industry index to qualify for an achievement award. In addition, the two projects which are furthest below the national average receive additional recognition.

Ordinary Accidents

Sixty percent of fatal accidents among representative chemical companies in a 5-year study came from falls, machinery and other causes that did not involve chemical processing or handling of chemicals, S. M. MacCutcheon, safety director of The Dow Chemical Company, of Midland, Mich., told the convention indicating that safety engineers must pay increasing attention to reducing the ordinary, over-all causes of accidents while devising new and specialized safeguards for particular industries and processes.

Accidents killed 4 persons and injured 360 while Elmer E. Wyland, assistant vice-president in charge of personnel of the Mountain States Telephone & Telegraph Company, gave a 20 minute talk on accident prevention.

"Statistics show," said Mr. Wyland, "on an average that for every 10 minutes that I talk, 2 persons will be accidentally killed and 180 injured, and costs will amount to 150,000 dollars. He added that safety must become habitual in order to reduce accidents.

The most skilled craftsman is not always the safest worker, Martin F. Corcoran, general foreman for Colonial Air Lines, explained at the convention. Mr. Corcoran said skill too often means only that the mechanic has mastery of the mechanics and procedures required to perform a job. Production, however, is more intimately related to the skill of safety than to the skill of job performance.

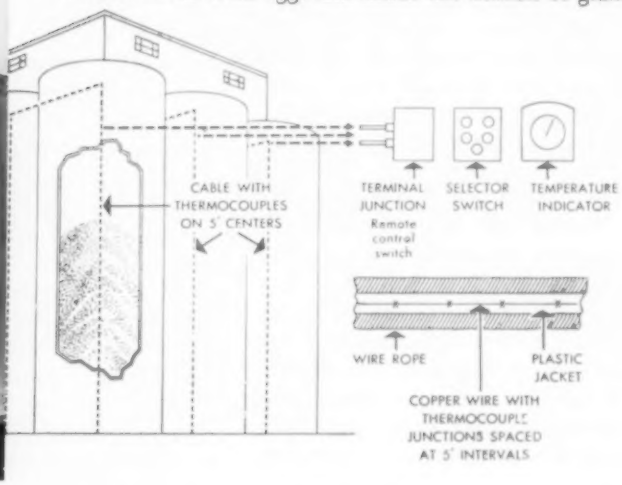
Stressing the responsibility of management showing its concern, by deed as well as word, with safety, Mr. Corcoran said: "We have found that the halting of production for short safety talks is helpful. This method has the psychological ap-

(Continued on page 42)

Schematic diagram shows grain storage plant equipped with temperature indicating system. Cable with indicators is hung in elevator, surrounded by grain. Cables from several bins lead to single temperature reading point.

A NEW kind of temperature indicator housed in a flexible steel wire rope is now in use for detecting deterioration in stored grains. The new temperature-checking cable will help prevent the huge grain losses that occur every year.

All stored grains are subject to deterioration caused by insects or moisture. This deterioration must be detected before excessive damage is done to the grain. Many insects hatch from eggs laid inside the kernels of grain.



Wired For Protection

New device detects deterioration in millions of bushels (and dollars) of stored grain.

Superintendent reads recording of temperatures throughout stored grain. Any rise may indicate deterioration.

The moisture may be inherent or come from condensation. When moisture or insects are present the affected area will heat. By keeping track of temperature changes in the stored grain, it is possible to know when to aerate or disinfect the grain and keep loss to a minimum.

Grain stays in storage facilities for varying periods—from a few months to a few years, depending upon the crop production from year to year, and the consequent carry-over. It therefore requires long term protection.

Many types of bugs attack grain, both in the field and in storage. The worst storage-threatening insect is the weevil, which lays its eggs in the grain. When they hatch, the grub eats out the inside of the kernel and is a full-sized adult when he breaks through. If the grain is dry, with less than 12 percent moisture, and if the temperature stays at 60 degrees or less, the weevils will

not hatch out. If the grain is damp with a temperature of 80 to 90 degrees, weevil eggs not reached by disinfectants will hatch out. A single tank, containing as much as 250 thousand bushels of grain could completely spoil in 3 month's time under these conditions.

Moisture is the greatest problem in grain storage. If there is rain during the harvest season, then extra trouble is in store for grain handlers. The moisture causes the growth of micro-organisms, lichens and mildews in a great multiplicity of forms, all of which endanger stored grain. Excess moisture accounts for about 10 times the losses that are caused by insects in stored grain. It is relatively easy to disinfect grain that is suspected of containing insects. Pouring a chemical on the grain as it passes over a conveyor belt does the trick. The chemical evaporates after it has done its work.

Up to the time of the introduction of the new device the temperature in elevators had been taken by a relatively expensive and unsatisfactory method of pushing pipes down into the grain and dropping a thermometer into the pipe. Another expensive process is to turn the grain periodically, whether it needs it or not.

The new indicating device consists of a plastic-coated copper circuit, with constantan thermocouples every 5 feet, inside the rope. (Constantan is an alloy of nickel and copper. A thermocouple is a device to measure temperature differences).

In a typical grain storage elevator, cables are hung down into the bins, several cables being used for larger diameter bins. Then, the grain is poured in, completely surrounding the cable. The thermocouples, placed every 5 feet in the cable, indicate the slightest change in temperature. The cable comes in any length up to 190 feet. It can be installed vertically or horizontally in any shape or type of storage bin. It is adaptable to the old wooden and tile grain elevators, as well as the more modern steel or concrete bins and terminals.

In the cable system the electrical circuit is led to a central reading point. Here rotary switches make individual connections to each of the thermocouples placed throughout the stored grain, and the temperature at each point is indicated. Simplified dust-proof rotary switches are employed at the reading point. In large installations a remote control relay system is used.

Periodic Tests

Under this new cable control, when a small rise in temperature in a part of a bin is noted, the grain is tested every 12 or 24 hours. If the rise in temperature continues, the grain is moved and either dried or disinfected. Usual practice where thermocouples are used is to test the grain every week or two under normal circumstances.

On the new cable, with thermocouples located every 5 feet, maximum coverage is provided by placing the cables on 5-foot centers in the bins up to 100 feet high. To reduce spoilage to a minimum, one thermocouple should be located in each 100 bushels of stored grain. In the past, storage practice called for a temperature detecting device for almost 1200 bushels. Sometimes 5 or 6 thousand bushels were watched by only one thermocouple, which meant that hundreds of bushels of grain were spoiled before discovery.

Grain is stored in elevators in temperatures that may range from 0 degrees Farenheit to 110 degrees. The insulating quality of the grain causes it to retain heat for many months with little loss or gain. The temperature at the different levels in a grain tank is taken and recorded after the grain has settled. Then the temperature is taken again and recorded for each of the spots where a thermocouple is located.

Any increase in the temperature, particularly in the winter, is regarded with suspicion. Even an increase of 1 degree is a cause for vigilance. If the same spot a few days later shows an increase of 2 degrees, the owner has the grain checked on the 12 to 24 hour basis. If the rise is as much as 3 degrees, he may order the grain moved and treated. The affected areas do not heat enough to burn.

Engineers feel that the smallest grain storage elevator which would be feasible for protection by the cable system is a group of 6 tanks, each holding 3 thousand bushels. The cost of operating the cable with its selecting and indicating instruments is very small. There is practically no maintenance cost. Aside from interest on investment, the only direct charge is for labor in operating the instruments and recording the temperatures indicated. The larger installations, using an electronic indicator and one or more motor-driven remote-control selectors, consume current equivalent to that consumed by a 50-watt light bulb.

Other industries which store hydrocarbons, such as coal and petroleum, may be able to use the temperature-controlling cable. The oil industry may use the cable to check the temperature of various levels in stored petroleum products, since volume of these products varies with the temperature. Also, the temperature in masses of curing concrete, such as dams, can be watched with the cable containing thermocouples encased in strong wire rope.

Pictures by courtesy of Jones & Laughlin Steel Corp.

Major Federal Agency Extends Safety Program

THE Federal agency employing the largest number of civilian personnel in the Government is making plans to extend its safety program by the establishment of fifteen Regional Safety Engineering Offices to be located in Boston, New York, Philadelphia, Richmond, Atlanta, Birmingham, Cincinnati, Chicago, Minneapolis, St. Louis, Kansas City, Dallas, Denver, Portland, Oregon, and San Francisco.

These positions will offer a distinct challenge to men of proved safety engineering experience. The starting salary will be $7040. For further information, write to the Editor, SAFETY MAINTENANCE AND PRODUCTION, 75 Fulton St., New York 38, N. Y.

Safety Goes Mobile

By LEON J. BAKER
Safety Director
Higgins, Inc.
New Orleans, La.

TODAY industry finds many new problems in maintaining an effective safety program and must, therefore, follow new avenues of protection. Many old safety practices are now obsolete.

New and synthetic materials have come into use: some paints, glue and plastics may cause explosions, asphyxiation and fire. What is the use of thousands of dollars worth of safety equipment, if it is not almost instantly available for rescue work, fire-fighting or first aid? Placing protective and safety material near supposedly hazardous spots is no longer found adequate. Who knows where an emergency might occur? When a life is at stake, precious minutes may be lost getting the right pieces of equipment to the scene because it was kept in the wrong spot.

At the Higgins, Inc., plant and shipyard in New Orleans, Louisiana, an emergency unit, which is an innovation in industrial safety equipment, has been developed. In the extensiveness of its equipment and its speedy availability, this unit far exceeds those of many municipalities, hospital and other industrial plants.

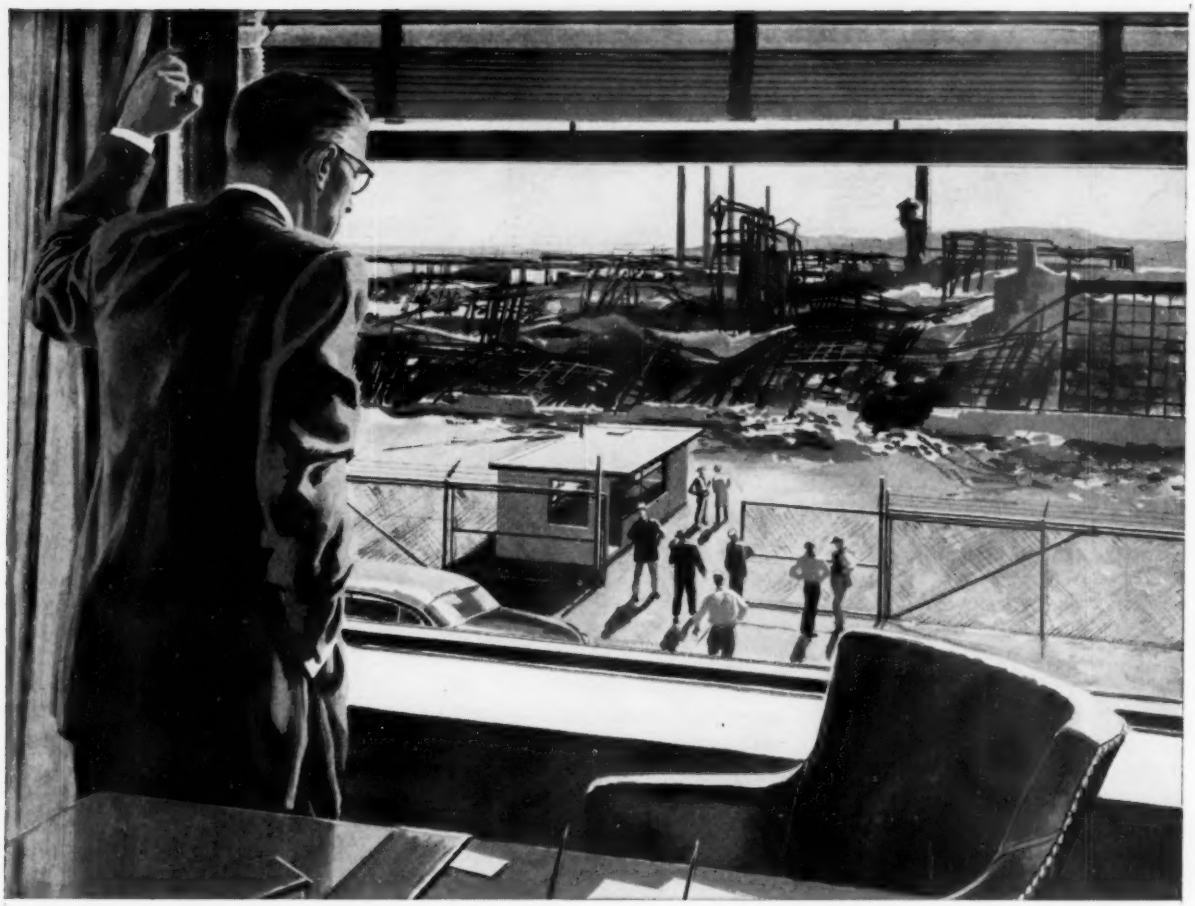
An old bus which was used to transport workers to the plant during World War II has been converted into an efficient and speedy means of transporting and handling safety, rescue, first aid and fire equipment. Seats were torn out, and every available inch of space was used to build bins, racks and shelves each to hold its own particular piece of equipment and labeled so that no time is lost in finding needed articles. The company's entire variety of emergency equipment, 472 pieces, is at hand with the arrival of this truck.

The truck responds to all fire alarms and all ambulance calls, unless the injury reported indicates it is not needed. At times the unit responds to emergency calls outside of the company property. It is also available to the city fire and police departments and is a part of the New Orleans Civilian Defense Program. Three teams of 7 men each have been trained to man the emergency unit, two teams on the first shift and one on the second shift. Each team includes 4 firemen, an electrician, a burner and a first aid man. All work in the area near the plant's safety headquarters where the unit is kept.

During 8 months of service, the unit has proved its value many times. The use of breathing apparatus has permitted firemen to penetrate smoke areas quickly to reach the seat of the fire. It is a self-contained unit that generates its own oxygen. A shallow water diving outfit has saved hundreds of dollars in time by being immediately available for inspection and repair of the company's mobile dock. Having resuscitating equipment available has helped save more than one person who needed oxygen immediately, as well as those suffering shock from injury. Recently, an employee was knocked unconscious by lightning, and he owes his life to the quick use of a device which administers artificial respiration automatically. During a recent tornado disaster, the company's unit was among the first to arrive on the scene, a residential area 2 and one-half miles from the plant, bringing an electrician, a burner, firemen and first-aiders to the assistance of those stricken.

One safety expert who examined the truck and its equipment remarked that the company must have invested at least 35,000 dollars on such a unit. The fact is that most of the equipment was already available in scattered locations throughout the plant and the only cash outlay was 1344 dollars for some new apparatus.

Picture by courtesy of Mine Safety Appliances Co.



As never before...

Today we are all aware of the disastrous and far-reaching effects of a major industrial fire. Owners . . . management . . . employees . . . customers . . . almost every one suffers, in one way or another, when a serious fire strikes.

Could it happen to your plant? Now is the time to take a long, close look at your plant's fire protection measures. Remember, the local fire protection ordinances normally only set minimum standards. Compliance with these ordinances is no guarantee of fully adequate firesafety.

One way to be absolutely sure of the efficiency of your plant's fire protection facilities is to call in an expert C-O-TWO Fire Protection Engineer. He is ready and willing to help you with any or all industrial fire hazard problems.

There is a personal sense of responsibility inherent with C-O-TWO Fire Protection Engineers that assures you of fully adequate firesafety . . . a definite plus in your behalf. Whether it's fire detecting or fire extinguishing . . . portables or built-in systems . . . C-O-TWO means top quality backed by experienced engineering that results in operating superiority for you at all times.

WHEN BUSINESS STOPS . . . INCOME STOPS!

Don't take chances with your investment. Secure the benefits of highly efficient fire protection engineering today . . . our extensive experience over the years is at your disposal without obligation. Get the facts now!

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Pressure Tests Warn Of Weak Extinguishers

A HYDROSTATIC pressure test of extinguishers at periodic intervals, as part of the fire protection maintenance at the Scovill Manufacturing Company, was described recently by The Factory Mutual Engineering Division. The purpose is to discover if any of the extinguisher shells have been weakened by age, corrosion, or mechanical damage. Such weakening could cause an extinguisher to burst when operated, injuring the user.

Soda-acid, foam, anti-freeze, and the water-filled gas-cartridge are the types susceptible to this danger.

Plants which do not have the equipment for these tests can arrange to have them made by an extinguisher manufacturer or distributor. For those so equipped, the recommended procedure is as follows:

1. Empty the extinguisher. Remove acid bottles, inner chambers, or gas cartridges.

2. Wash the interior with clean water. Look for signs of serious corrosion.

3. Connect the extinguisher to the hydrostatic pressure test pump by means of a pressure hose clamped over the extinguisher nozzle.

4. Engage the extinguisher cap loosely by one or two threads and fill the extinguisher with water until it discharges through the relief holes in the cap. If there are no relief holes, allow the water to seep out between the cap and collar threads.

Caution: Any air remaining would greatly increase the violence of rupture in case of failure. Therefore, provide a substantial shield between the operator and extinguisher.

5. Screw the cap down tightly.

6. Increase the pressure gradually to the test pressure indicated on the extinguisher nameplate, but no higher.

7. Maintain pressure for one minute and examine for leakage. Discard any extinguisher with a leaking shell. Do not try to repair.

February Fire Losses

ESTIMATED fire losses in the United States during February amounted to $78,928,000, according to the National Board of Fire Underwriters. This loss represents an increase of 8.6 per cent over losses of $72,706,000 reported for February, 1953, and a decrease of 8.7 per cent over losses of $86,493,000 for last January (1954).

Losses for the first two months of 1954 now total $165,421,000, an increase of 10.7 per cent over the first two months of 1953, when they amounted to $149,365,000.

A Safety Tip for Cutting Oily Steel

THE cutting of oily steel plates can be hazardous because flames from the cutting torch often heat the oil deposits to the ignition temperature quickly, causing fires.

One way to avoid such fires, say engineers of the Ansul Chemical Company, is to spread a thin layer of dry chemical over the area to be cut. The dry chemical extinguishes the flames before they can get started, and production remains uninterrupted.

Check Your Fire Pumps

NEVER take the condition of centrifugal fire pumps for granted. Their ability to respond adequately at a time of fire emergency means that sprinkler, standpipe and hydrant systems can operate at their full capacity. The National Board of Fire Underwriters offers the following suggestions for maintaining and operating fire pumps.

A test should be made of centrifugal fire pumps every week, running them at their rated speed and with the water discharging to a convenient opening. These weekly test runs will help uncover deficiencies in the suction pipe, strainers, bearings and electrical equipment.

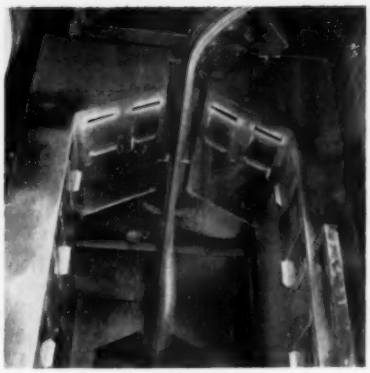
Each year a test should be made with fire hose, at full capacity and over, to make sure that there is no obstruction in the pump nor the suction pipe.

The pump must always be in a "ready" condition for instant service. It should be located where its operation will not be interrupted by falling walls, machinery, fire or water. Installation in a one-story noncombustible structure isolated from the main buildings is preferred. The pump rooms must be well lighted and heated, and kept clean and orderly.

Before starting a centrifugal pump, be sure it is primed or the casing filled with water. The interior wearing rings require water as a lubricant. Pumps that are primed from a gravity supply such as a tank can be started when water

(Continued on page 40)

By FRANCIS E. FEENEY
Plant Protection Chief
Carrier Corp., Syracuse, N. Y.



Flo-coat painting machine is protected by temperature indicators and CO_2 cylinders.

It may threaten our plant, but we... NEVER GIVE FIRE

Manual releases for automatic CO_2 extinguishing systems are needed safeguards.

THE active backing of top management, coupled with adequate budgets and intelligent administration has enabled us to protect our 19 million dollars worth of production equipment and plants. While fire loss statistics can be misleading, Carrier Corporation's figures are impressive.

During the past 10 years the company's plant investment has grown from 2 million to 19 million dollars; its sales from 38 million to 164 million dollars; and the number of employees from 2,800 to 8,800. The same decade has seen no major fire loss at our plant, and for the past 5 years the average annual loss has amounted to only a few thousand dollars. Most significant of all is the fact that over the past 5 years, the number of fires reported yearly have declined steadily, with only 29 reported in 1953!

Let's look at our plants and see how the control program works.

Two Areas Protected

Carrier maintains two large operating areas at Syracuse, New York. One is located on a 30-acre tract within the city limits. Its 5 major buildings, the tallest of which is 7 floors high, contain 1,089,000 square

A CHANCE!

Monthly fire brigade meetings acquaint members with latest fire-fighting methods.

Fire truck, equipped for all emergencies, has 2-way radio, responds to any alarm.

feet. All of the structures are of steel reinforced concrete construction and floors are subdivided into smaller areas by fire walls with self-closing, fusible link doors.

All of the buildings at this plant are 100 percent water sprinklered, supplied from city mains at 96 psi. In addition, a 90 thousand gallon underground reservoir is available for emergency use. The plant's power house has both a steam and electric booster pump either one of which can feed 1000 gallons per minute to the fire lines.

Three types of sprinkler systems are found in the plant. A deluge occurs in paint storage areas, a dry system is installed in open loading and receiving platforms, while normal wet systems are provided for all other spaces. Depending on likely temperatures to be encountered in the section of the plant concerned, sprinkler heads operate at anywhere from 165 degrees F. to 360 degrees F.

Numerous inside hose racks, tied into the wet sprinkler lines, are available throughout all 5 buildings. Each is equipped with 100 feet of 1 and a half-inch hose and fitted with the nozzle appropriate to the particular fire hazard. Conversely, 5 outside hose houses are strategically placed throughout the property. Each one has 300 feet of 2 and a half-inch hose, spray and straight stream nozzles, and appropriate wrenches, etc.

Outside The City

Another of our plants located outside the city limits about 7 miles from the heart of town, is the larger and more modern of the 2 manufacturing units. Of the plant's 150 acres, approximately two-thirds of the tract is developed and contains 4 major buildings and 14 auxiliary structures. Combined floor space totals 1,569,000 square feet. Here again one finds steel and concrete construction, but unlike the other plant, most of the major buildings are only one story high.

The structures are approximately 95 percent water sprinklered. Only hazard-free areas are not so protected. Two 60 thousand gallon gravity tanks provide constant water pressure at 60 psi for the fire line system, and a small centrifugal pump operates constantly to boost line pressure to 80 psi to assure full gravity tanks.

Complementing this supply is a million gallon underground reservoir for fire fighting and sprinkler system operation. Three booster pumps are available in the plant's power house for this auxiliary water supply, any one of which can pump at the rate of 1,500 gallons per minute. Most of the plant areas have automatic wet sprinkler systems. However, dry pipe lines are installed in large inside areas subject to freezing; and anti-freeze glycerine systems protect special hazards on outside areas. A total of 30 hose houses dot the grounds and many interior hose reels are strategically located within the buildings.

We have adopted a method of identifying the location of fire extinguishing equipment at a glance from virtually any location in the building. All one has to do is look for two, 2-inch bands of red paint spaced about a foot apart at a 15 foot height on walls or columns. From almost any location on any floor, several such markers are visible.

Portable Extinguishers

The plants use foam, soda acid, water, anti-freeze, carbon dioxide, dry chemical, and carbon tetrachloride portables. Of the 896 portables of assorted types and capacities at the two plants, the majority are carbon dioxide. Dry chemical extinguishers will be increased to replace some other types.

Noteworthy in our portable service program is a weekly check of every extinguisher. Mimeographed rosters list every unit available, the location of each one, and other pertinent information. Each portable on the list is checked weekly, its condition noted, and its recharge card inspected. When necessary, extinguishers are sent to our plant fire department headquarters for repair or recharging. Replacements are, of course, provided.

Program Administration

Fire protection falls in the jurisdiction of the corporation's department of Security and Protection, and is administered by the plant protection chief. Working under him is a plant protection captain

for each plant and a fire marshal. The staff under each plant's protection captain comprises another captain, three sergeants (one for each shift), patrolmen, and a fire inspector who answers primarily to the fire marshal.

Fire inspectors devote themselves exclusively to the job of fire safety. At one plant, for example, he makes a daily tour hunting for conditions which constitute a fire hazard. It is his job to check the fire extinguishers weekly and to inspect, test, and report on sprinkler control valves. Each inspector takes an active role in the company's employee fire brigade training program, assisting in directing fire fighters at a blaze, and making a complete report of any fire.

Inspectors also are responsible for any flame cutting or welding and must issue written permits before such work can be done. Prior to the issuance of a permit, the inspector visits the area in which the job will be done to eliminate any possibly hazardous condition. When he is satisfied that the minimum fire risk exists, he issues a permit. This isn't the end of his duties, however. While the work is being done, he posts a fire watch, sees that portable extinguishing equipment is at the scene, and that fire resistant tarpaulins cover the area, if needed.

Monthly reports of unsatisfactory fire safety conditions noted by the inspectors are prepared. The hazard is described, its location noted, the responsible individual identified, and the length of time the hazard has remained uncorrected stated. If the same hazard is repeated in three successive reports, the director of security and protection takes up the matter directly with management personnel responsible for that plant area. Meanwhile, the report itself is distributed to top management.

Knowing that no piece of fire extinguishing equipment operates any more efficiently than the personnel available to handle it, we have constantly promoted thorough fire brigade training. While I supervise this program, actual instruction falls to the fire marshal aided by the fire inspectors. The company has found that during production shifts, its fire safety needs are satisfied by brigades consisting of a brigade chief, four captains, and 30 firemen. During night shifts, they consist of a brigade chief, 3 captains and 15 firemen.

Great care is taken to include supervisory personnel in each brigade, and members are selected so that firemen are scattered throughout the entire plant. This means that several firemen are immediately available in any section of the plant to begin action in any emergency prior to the arrival of the full brigade. Moreover, these fire-safety trained men are full time fire watchdogs.

Volunteer Members

Brigade members volunteer for the work and serve without extra compensation. However, prestige inducements are offered such as badges, merit awards, and an annual outing for brigade members. Brigades meet monthly for training on company time. The hour sessions may be devoted to fire prevention or fire fighting lectures, explanation of new equipment, a plant tour pointing out safety apparatus or operations considered to be particularly hazardous, or a practical fire fighting demonstration employing portable extinguishers or hoses. Films are also shown. A list of topics taken up during the year includes Fire Line Systems, Portables, Permanent Equipment, Determining Fire Causes, and Salvage . . . to cite a few.

We put a great deal of faith in practical fire fighting demonstrations. In my opinion, a man who has handled fire fighting equipment and actually extinguished roaring blazes with it, will act immediately, effectively, and with confidence—— when confronted with a factory fire. For this reason, the company gives at least one fire demonstration yearly for supervisory employees and frequent drills for brigade members.

In case of fire, a total of 43 alarm boxes are available. When triggered, a coded alarm is sounded at every alarm box and also at the tape recorder in the company fire department headquarters. Further, every telephone at the plants has a conspicuous tag on the base of the phone giving the extension to call to report a fire and the extension to call if medical aid is needed. The plants' public address system can also be employed in a fire emergency.

At the fire signal, brigade members and fire department personnel head for the "in trouble" spot together with key maintenance personnel. Simultaneously, booster fire pumps are thrown into operations. If necessary, the municipal fire department can be called, either by telephone or from municipal alarm boxes.

The company fire truck responds to every alarm. It contains a 200-gallon booster tank and is capable of producing a line pressure of 130 pounds. The truck is equipped with 1 thousand feet of 1 and a half-inch hose, 1 thousand feet of 2 and a half-inch deck gun with a Siamese connection and check valve, flood lights, foam generators, portable extinguishers, and other appropriate equipment. High frequency radio equipment is available for communication between the fire house, the fire truck, and other department vehicles.

Particularly hazardous production operations are protected with special apparatus. Our tank farm, currently little used, is equipped with a foam system and completely diked. However, the tank farm fire problem is small compared to the painting hazard. Painting of parts at both plants is done in areas in which "no smoking" is strictly enforced. These areas are also adequately supplied with portable extinguishers for use on flammable liquid fires.

In the most impressive painting operation, a huge flo-coat machine deluges a multitude of parts ranging from tiny wheels to huge cabinets with a mixture consisting of four parts alkyd-melamine synthetic baking enamel and one part xylol thin-

FASTER

MORE EFFECTIVE... MORE DEPENDABLE

FIRE-STOPPING POWER

MODEL 20-B

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MORE EFFECTIVE . . . Even the inexperienced operator gets near-expert results because of the ease of operation and handling. In addition ANSUL *"PLUS-FIFTY"* Dry Chemical has greater fire-killing power.

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Send for File No. B-212. You will receive a variety of helpful printed matter. Included is our latest catalog which describes Ansul Extinguishers of all sizes — from the small Ansul Model 4 to Ansul Piped Systems and Ansul 2000 lb. Stationary Units.

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ner——a highly combustible mixture. Travelling on an overhead conveyor, the parts pass through the flo-coater, enter an enclosed drain area, and eventually are baked in a rooftop oven. Operation of the machine is semi-automatic.

Every effort is made to make the painting areas as fire safe as possible. The machine itself is cleaned daily, and thoroughly washed monthly. Ventilation whisks away vapors as quickly as they form; all equipment is grounded; and electrical equipment is explosion proof. Even with these precautions, we have recognized that when oxygen and a flammable liquid are present, all that is needed to turn the orderly painting process into an inferno is an ignition source. Taking no chances, the company has had designed and installed an automatic carbon dioxide fire extinguishing system for the flo-coat machine. Should fire flash, temperature-rate-of-rise fire detectors mounted in the machine immediately trip five 50-pound cylinders of the fire smothering gas. Under its own pressure the gas floods from its containers and passes through piping to the machine where it is discharged from nozzles flanged into the housings of the flo-coat chamber and the drain tunnel. The inert gas reduces oxygen to a point insufficient to support combustion and the fire is virtually smothered.

Built into the system are pressure operated switches actuated by the passage of gas through the piping. They cause power for the machine and the paint pumps to be secured, shut off ventilation equipment, and sound an audible alarm. It is interesting to note that we adapted this equipment so that if the flo-coater's forced draft ventilation system fails (no fire involved), the machine also stops and the alarm sounds. Housed in the same wire cage enclosure containing the basic carbon dioxide cylinders is a reserve set. By means of pull boxes mounted on the enclosure, either the primary or the reserve charge can be manually actuated.

Pictures by courtesy of Walter Kidde & Co., Inc.

Fire Pumps

(Continued from page 35)

shows at the vent cocks. If they are primed by an exhauster, the device will indicate when the casing is filled.

During the first few minutes of running watch the bearings and stuffing boxes carefully for any signs of heating or necessary adjustment. Check the suction inlet gauge and the discharge pressure gauge from time to time to make sure the inlet is not obstructed.

Even if the demand for water is small during a fire, centrifugal fire pumps should be run at full rated speed. The relief valve will normally keep the pressures within safe limits. It is well to give sprinklers a high pressure supply at the start. When fifty sprinklers open, the full capacity of a 750-gallon pump may be required. The opening of several sprinklers at once can materially reduce the pressure of the public water supply and the action of the pump may be needed to maintain the water supply at high pressure.

Turbine Pumps: When a steam turbine is used to drive the pump, the steam should be released slowly at first. This gives the turbine casing a chance to warm up before the full steam pressure is introduced. If the pop safety valve on the casing blows, shut off the steam and check the exhaust piping for a closed valve or obstruction in the pipe. Remember that steam turbines have governors to hold the speed within a relatively narrow predetermined range. Other speeds below this range can be obtained by throttling the main throttle valves.

Motor-Driven Pumps: In starting a motor-driven pump, the following four steps should be taken in order: 1. Prime the pump; 2. check the voltmeter to see that voltage is normal; 3. Close the circuit breaker and disconnecting switches; 4. Carefully operate the starter, noting the ammeter for excessive starting currents that might cause the circuit breaker to open.

Combustion Engine Pumps: Of primary importance for internal combustion engines used to drive centrifugal fire pumps is the maintenance of the storage batteries. If the batteries are not in good order, they may not be serviceable for starting the engine. Because the designs of internal combustion engines vary considerably, the instruction book of the manufacturer should be thoroughly studied for information on the starting, operation and care of the engine.

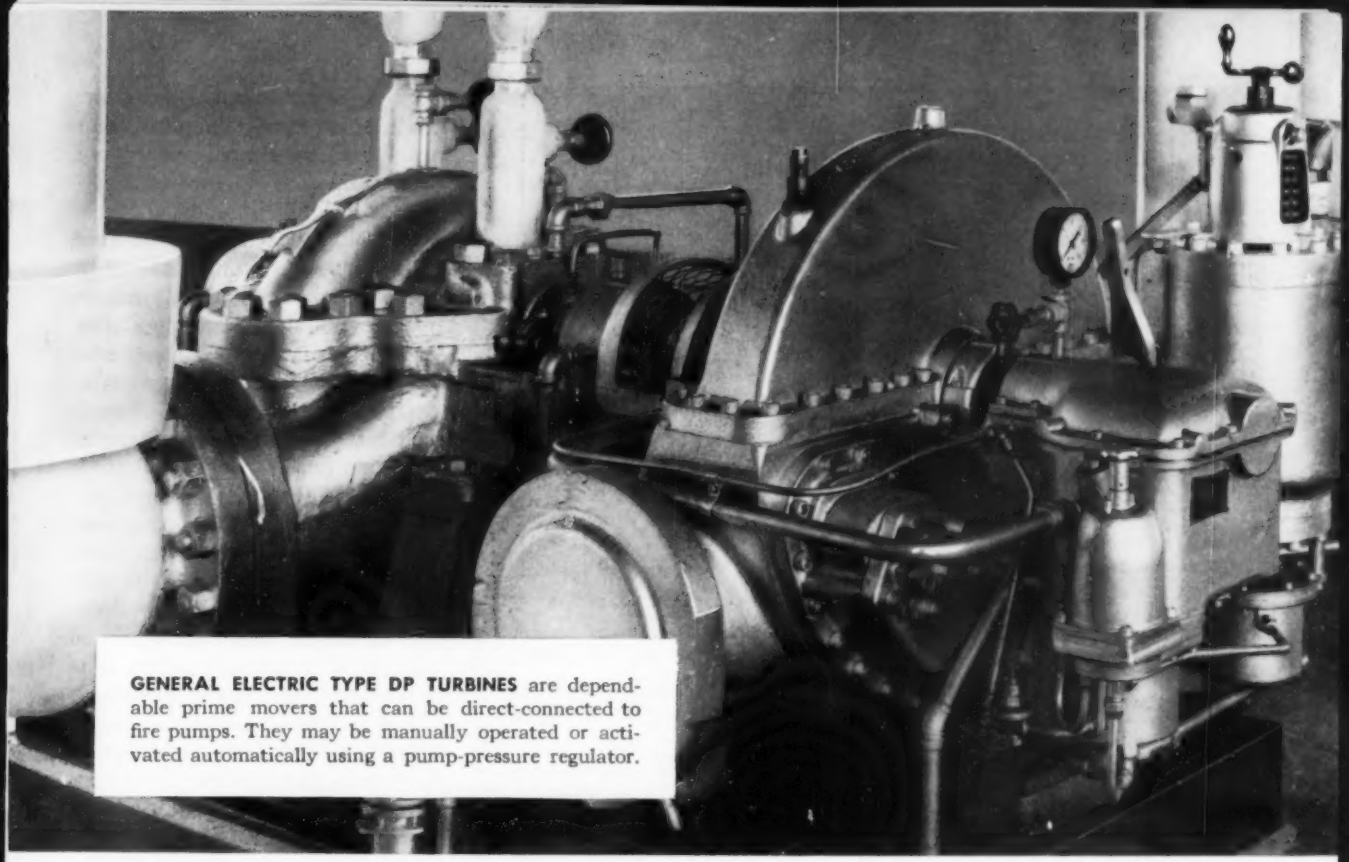
Vinyl Chloride Fires

FIRES in vinyl chloride, a highly volatile chemical used in the plastics industry, can be extinguished effectively with dry chemical fire equipment, according to preliminary tests made by Ansul Chemical Company. The tests, made at the request of a midwestern chemical company, indicate that vinyl chloride may have a fire intensity approximately three times greater than liquid propane under corresponding conditions of pressure and temperature. Because of this, Ansul engineers recommend that three to four times more dry chemical equipment be used than that required to extinguish the liquid propane fires.

The engineers noted an unusual characteristic of vinyl chloride during the tests. When the liquid vinyl chloride was vaporized into the air, it vaporized completely. However, when the discharging liquid hit against an object—in this case a steel baffle plate—some of the liquid froze into a semi-solid similar in appearance to a frosted malted. The solid material burned slowly, like solid paraffin, but caused many points to reignite. Complete coverage of all parts of the flame area with dry chemical was necessary.

Vinyl chloride, which freezes at —256°F and boils at plus 10°F, is slightly lighter as a liquid than water, and its vapors are twice as heavy as air; as a result, water streams spread a liquid vinyl chloride fire and released vapors tend to settle in low areas.

Vinyl chloride's flash point is below plus 20°F and its explosive range varies from 4 to 22 percent.



GENERAL ELECTRIC TYPE DP TURBINES are dependable prime movers that can be direct-connected to fire pumps. They may be manually operated or activated automatically using a pump-pressure regulator.

Can Turbine Drives Make Your Plant Fire-protection System More Dependable?

For truly comprehensive plant fire protection, pump drives must be ready for immediate and continuous operation. To help meet these requirements, General Electric Type DP turbines are built to fire-protective code* standards. They have simple, rugged construction, are quick starting, and afford dependable operation.

Available at ratings up to 1200 hp for fire-pump service, these standard Type DP turbines have thousands of hours of proved dependability on regular commercial applications. Features that make them especially reliable for fire-pump drives are:

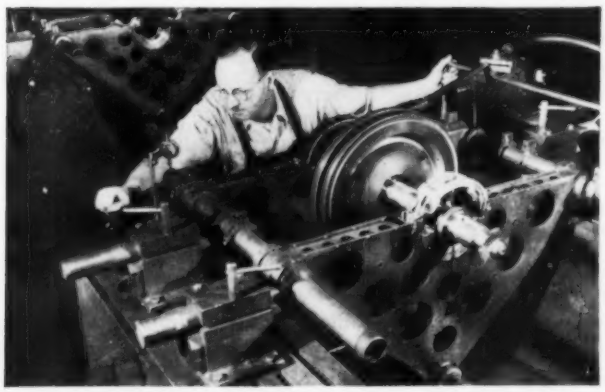
A totally enclosed hydraulic governing system that keeps moving parts to a minimum and eliminates exposed linkage that might wear or corrode.

A compact, pressurized lubrication system that provides more than ample oil, minimizing bearing burnouts during rapid starts, and assuring continuous operation even under adverse conditions.

A sturdy, well-balanced rotor that enables turbines to attain full speed quickly.

Be sure to consider these important features of General Electric turbines for fire-pump drives when planning or reviewing your plant fire-protection system. For additional information, contact the nearest General Electric Apparatus Sales Office or write for GEA-6099, "Mechanical-drive Turbines for Fire Pumps." Address Section 252-67, General Electric Company, Schenectady 5, N. Y.

*National Board of Fire Underwriters' Pamphlet No. 20.



PROPER BALANCE OF TURBINE ROTORS is essential for quick-starting pump applications. Rotors for Type DP turbines are given static and dynamic balancing tests to assure smooth operation throughout the range of turbine speeds.

You can put your confidence in—

GENERAL ELECTRIC

(For full details, use Key # R-15 on free Inquiry Card on page 77)

If You Wanta Catch Fish . . . You've Gotta Cut Bait!

SAFETY-WISE, most of us are better "fishermen" than "bait cutters." Not long ago I watched an old time guide and fisherman regularly catch his limit in a trout stream in a "poor fishing area." His explanation was simple—"*learn about fish*"; "*get the proper tools*";—*and keep fishin', son,—just keep fishin'!*"

Most vacation fishermen load themselves down with equipment, little knowledge, and good intentions, but usually end up with more excuses than fish. *Part-time safety programs produce the same lack of results.*

SAFETY-WISE, how many of us are "vacation fishermen"—"fish a little"; "read a little"; attend meetings and talk a little;—but how many trophies do we have in our "game room"? How many dollars do we "net" from real "safety fishing"?

Do we really "cut bait" and land the "big fish"—or do we apologize and make excuses for "the big ones that got away"—the accident that should not have happened?

Safety Makes "Cents"! The boys who are landing the "big fish dollars" are using the same "tackle and bait" that all of us can have! Their success may start from "know how" and equipment, but continues because they "just keep fishing."

"SAFETY BAIT" won't catch "fish" if it stays in the library or locked in the file drawer. *If you want to catch fish, you have to cut bait—and use it!*

Good "safety fishing" spends dollars to make dollars. Safety activity in your own operations and in competition with others pays dividends in lower insurance, maintenance, and operating costs; better fire protection; more profitable customer relations, and smoother working employee teams.

If you "*fish*" *for safety:* Learn how to "fish";
Use the proper "tools";
Keep current with day to day "fishing problems."
If you don't like to "fish"—appoint a "fishing expert" with full power to "fish" for you.
DON'T FORGET—KEEP FISHING!

Vacation fishermen joke about the "big one" that got away—*let's brag about the accidents that did not happen!*

Courtesy of American Safety Tank Co.

Convention Highlights

(Continued from page 30)

peal of rating safety as more important than the immediate work assignment. It is evidence of supervision's human interest in the welfare of workers."

A "tremendous growth" in the number and size of hospitals in recent years has made the care of patients in such institutions the nation's fifth largest industry, the convention heard from Blair M. Patterson, administrator of Central Suffolk Hospital, at Riverhead, N. Y. Mr. Patterson said it was necessary, in the self-interest of hospitals, to provide maximum safety through construction, equipment, maintenance and employee training.

A series of controlled explosions was set off by Paul G. Guest, United States Bureau of Mines electrical engineer, to demonstrate the hazards of explosions in hospital operating rooms. He said that while fires and explosions during surgical operations were comparatively rare, there had been "numerous explosions, many of them fatal to patients" in the last 30 years because an electric spark had touched vapors from anesthetics.

"A source of ignition not so obvious to many is static electricity. Until quite recently the presence of this hazard in a large majority of anesthizing areas was not even suspected. Hospitals and manufacturers alike are at last making strides in substituting conductive for non-conductive materials in mattresses, stool upholstery, anesthesia machine parts, casters, shoes and floors. Thus, not only can static electric charges be removed and neutralized safely, but their initial formation can be greatly inhibited."

The dust of almost all non-explosive materials becomes explosive when mixed with air in certain proportions, the industrial waste disposal session was informed by William H. Doyle, chemical engineer of a leading insurance association. For that reason, Mr. Doyle continued, industry must provide safeguards against explosion from the time such dusts or mists are formed until they have been reprocessed for salvage or ejected into the air in a density below that of explosion possibility. He cited instances of fatal explosions resulting from dust of "non-explosive" materials combining with air in explosive proportions.

Since it is impractical to design a dust pick-up system so that a dust-air mixture will be non-explosive under all possible conditions, ducts should be of heavy construction when inside a building, and should be run outside the building wherever possible, equipped with outside blow-out disks at each change of direction.

The sewers of industrial cities are potential "bombs" which could be exploded by cigarettes flipped into manholes, Earl R. Wallace, safety engineer of the Eastman Kodak Company at Rochester warned the industrial waste disposal session.

Although large industries are disposing of most of their flammable or explosive wastes in plants of their own, said Mr. Wallace, a vast aggregate of explosive vapors collects in sewers from small commercial and industrial establishments and sometimes from poorly constructed or carelessly operated larger plants. It has been determined, Mr. Wallace reported, that one gallon of a flam-

mable solvent such as acetone, as vapor, can make one mile of eight-inch sewer tile an explosive bomb.

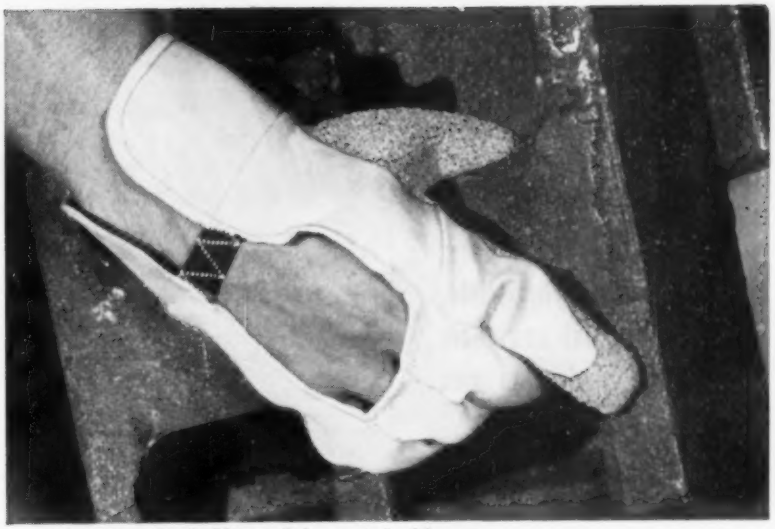
Much of what industry formerly regarded as a waste disposal problem has been solved by waste reclamation. Many former waste products have been made into profitable by-products, Mr. Wallace said, citing the use of saw dust at lumber mills as fuel and its conversion into many products, and the sale of fertilizer made from the sludge of sewage disposal plants.

Dr. Harold Brandaleone, medical director for the Third Avenue Transit System in New York City, told the convention's industrial health session that a driver's rating in 6 classifications determines his safety or accident potentialities and gives his safety "profile." The system, he said, was developed in the transportation industry along lines that had been established by the United States Air Force in evaluating pilot candidates.

Driver Needs Rated

The rating includes: general physical capacity or stamina of the driver, considering age, build, strength, stamina, height, weight, ability, energy, muscular coordination, and function; organic functioning and defects for specific driving jobs, hearing defects and aural pathology; eye ailments and other visual defects; neuropsychiatric conditions, such as behavior and character disorders, mental deficiencies, and psychosis; and driving skill.

Henry W. Clement, Municipal Magistrate of Plainfield, N. J., urged wider use of chemical tests on intoxication suspects for two reasons: to make conviction of drunken drivers more certain, and to prevent false imprisonment of persons who, because of physical or nervous illness, give the appearance of being drunk. He cited examples where chemical tests showed no alcoholic content in persons whom police had thought intoxicated on the basis of visual observation. The driver under the influence of alcohol, Magistrate Clement continued, is 55 more times likely to have an accident than the normal driver.



Cool Vent-Back Glove: Palm coated with sure-gripping, long-wearing, rough textured natural rubber.

Costs 40% to 70% less to protect hands with palm-coated gloves

Coated palms outwear canvas or leather palms. Fabric backs give comfortable ventilation.

NEOX No. 93

Handling sharp-edged materials, wet or dry: Palm-coated with NEOX (specially reinforced neoprene) which is unequalled for resistance to cutting and puncturing and does not absorb grease or oil. Job-fitted for handling such materials as strip and sheet metal.

Grappler No. 362

Handling abrasive materials, wet or dry: This Grappler glove is palm-coated with DUROX, a leather-like plastic that outwears ordinary plastics 50% and retains its grip when wet. Band top and knitwrist styles are also available in regular plastic coating. All Edmont plastic coated gloves have wing thumbs and best fit of any coated work gloves.

Grab-it No. 62-W

Handling sharp, abrasive or slippery materials, non-oily: Grab-it type, palm-coated with rough-textured natural rubber which has remarkable non-slip grip, as well as long-wearing qualities on rough work. Available in knitwrist style, also.

Free Test Offer to Employers: Send brief description of your operation, materials handled and temperature condition. We will recommend the glove (palm-coated or fully coated) that best fits your application, and forward samples free of cost, for testing on-the-job. Our laboratory also develops special gloves for special applications.

Edmont Manufacturing Company, 1256 Walnut Street, Coshocton, Ohio

World's largest maker of coated industrial gloves, available through all leading industrial suppliers.

Edmont

Edmont job-fitted gloves

(For full details, use Key # R-16 on free Inquiry Card on page 77)

GREATER PERSONNEL PROTECTION THAN EVER BEFORE

safety engineers, industrial hygienists, industrial engineers and production men are

*REPLACING CARBON TETRACHLORIDE

with FINE ORGANICS' 'SAFE-TEE' SOLVENT

F.O.-128

(low toxicity—high flash)

and are safe-guarding personnel from nausea, vomiting, abdominal cramps, headaches, dizziness, jaundice, loss of memory and the more harmful effects on the lungs and the liver.

Combined with the exceptional safety features is the extreme **CLEANING AND DEGREASING** effectiveness of **F.O.-128.**

ADVANTAGES OF F.O.-128

- Minimized toxicity — fifteen times more safe than carbon-tetrachloride.
- High flash point reduces fire hazards.
- Will not produce dermatitis.
- Perfect for cleaning electrical and mechanical equipment without damage to surfaces or insulated components.
- Zero residue on drying.
- May be used in process cleaning for pre-paint or pre-plate operations.

WRITE TODAY for information on this and other FINE ORGANICS' "SAFE-TEE" Solvents. *Representatives in Principal Cities:*

*See July 1952 issue of Industrial Hygiene and Occupational Medicines

Write to Dept. "B" for FREE technical bulletin "How to Clean Electric Motors."

AVIATION-INDUSTRIAL DIVISION

FINE ORGANICS, Inc.

211 East 19th St. · New York 3, N. Y.

(Use Key # R-17 on Inquiry Card on page 77)

"What's the Law?"

Edited by
HENRY M. GROSMAN
Counsellor at Law, Newark, N. J.

Master Superior Court, New Jersey
Member
American Bar Ass'n, New Jersey Bar Ass'n,
National Federation Insurance Council
Past Commander, American Legion, Post 10,
Newark, N. J.

Since the start of this series of case histories, the author has received many letters inquiring about the decisions upheld or rendered.

It must be remembered by the readers that the Workmen's Compensation Law differs from state to state. Although many states have similar laws, what may be the law in one state does not necessarily apply in another. The citation following each case reveals the title, place, and date.

Nitric Oxide Causes Injury 5 Years Later

WHILE working above some nitre stacks an employee became ill from inhaling nitric oxide and sulphur dioxide fumes. After 11 days, he returned to work, but on being informed by company doctors that he had not suffered an industrial accident, he made no application for compensation.

Finding that gas fumes injured his health, he resigned his work. Five years later, on learning that he was suffering due to the inhalation, he applied for compensation.

He was refused a hearing by the Compensation Commission on the ground that a claim had not been filed within one year of the accident. The Supreme Court of the state held however, that the Commission was in error. The injured was then permitted a hearing.

(ENGLISH vs. INDUSTRIAL COMMISSION OF THE STATE OF ARIZONA, Arizona Supreme Court, No. 5498. November 19, 1951.)

Unusual Exertion Causes Death

A 43 year old volunteer fireman after responding to a fire call, 3 miles from the fire house, collapsed and died. He had been a member of the volunteer company for 15 or 20 years and just prior to his death was actively engaged in the actual administration of the fire company. The company had recently acquired a new piece of apparatus and it was the decedent's responsibility for driving and operating the many pumps. He had on many occasions run through the drills without difficulty; but, on arriving at the scene of the fire this time, he had difficulty in starting the booster pump. After 5 or 10 minutes he was successful in delivering water through the pump. Immediately afterwards, he asked a policeman to get a doctor and died.

At the time of the hearing, it was revealed that he had been under treatment for a rheumatic heart condition unknown to the members of the fire company. The Superior Court held that the evidence established that death resulted from an unusual strain or exertion arising out of and in the course of employment thereby awarding the widow compensation.

(SNODEN vs. BOROUGH OF WATCHUNG, New Jersey Superior Court, Appellate Division, 29 N. J. Super. 41. December 11, 1953.)

Slip Brings Award

At the time of his injury, a machine operator was operating a pellet house, which was located on an elevated platform with a stairway leading up to it. After checking the machinery on the platform, he started down the stairway. His foot slipped, causing him to fall against a heavy iron post. He im-

mediately became ill and had a fellow workman finish his work for him.

He was treated for a shoulder separation which had made his right arm useless and would necessitate surgical treatment.

He continued on working with the help of fellow employees for 52 weeks and was awarded compensation for 300 full weeks.
(TEXAS EMPLOYER'S vs. EVERS, Texas Court of Civil Appeals, Amarillo, No. 6161. June 18, 1915.)

What Caused the Injuries?

A steam fitter was employed to install and repair cleaning and pressing equipment in laundries and other places. On the night of the accident he was returning from a job in a pickup truck with a 4-wheel tandem trailer fastened on behind it. As he came over a hill on the highway, he saw the light of a highway patrol car indicating to him that a traffic accident had occurred ahead. He let up on the accelerator and started to slow down, when suddenly the trailer jacknifed causing the pickup truck to get out of control and crash in a ditch.

The steam fitter was unconscious when brought to the hospital. He had injured his back and head and lost sight in his right eye, the use of his right ear, had severe back pain and facial paralysis.

At the time of the hearing it was revealed that the employee was involved in a fist fight some 12 days before the accident and had received hospital treatment for injuries at that time. After a review of expert medical testimony, the court upheld the denial of compensation.
(HENSON vs. TULSA SALES AND SERVICE CO., Oklahoma Supreme Court, No. 34,977. October 2, 1951.)

Migratory Thrombophlebitis

The employee was injured when he struck his left knee against a work bench, fainted, and fell off his

What is this man doing?

He's helping reduce your accident rate!

Fifty percent of all accidents are preventable. That's an established fact. Here's another: the National Safety Council confirms that safety messages *that get read* do help reduce accidents. That's why it pays to . . .

Put your safety messages in your worker's hand — on an AJAX or AERO Cup — where he'll see them several times a day, when he's relaxed, receptive, ready to read. (And he'll appreciate the comfort, convenience and complete sanitation of these crisp, clean, easy-to-drink-from paper cups.)

AJAX® Cups — one-piece, wedge-shaped, easy to hold and drink from; in 4, 6, and 7 oz. sizes; packed imprinted with assorted stock safety messages or your own message to order.

AERO® Cups — for those who prefer a flat-bottom cup; in 3, 4, 5 and 6 oz. sizes. Also available imprinted with assorted stock safety messages or your own message to order.

GET THE FULL STORY

Write us today for this new folder which gives full details on imprinted AJAX and AERO Cups and equipment.

IT'S WORTH KNOWING

In a recent survey observers posted at three heavily-used public drinking fountains where both bubbler and paper cups were available noted that 79% of all users — men and women — *chose paper cups.*

AJAX and AERO Cups not only reduce the danger of transmitted infection, and thus help cut absenteeism — they improve worker morale because they provide the complete, sanitary, comfortable drinking water service most people prefer.

C2-8

United States Envelope Company

General Offices: • Springfield 2, Mass.

15 DIVISIONS FROM COAST TO COAST

(For full details, use Key # R-18 on free Inquiry Card on page 77)

chair. At the time, the injury was not regarded as serious. On examination 7 weeks later, a condition the doctor described as seeming to be phlebitis was observed.

For 10 years the employee received medical and surgical care under the employer's sickness benefit plan. The claimant employee then sought to prove a causal connection between the accident and the disease. He was unable to establish the necessary proof and was not awarded permanent compensation. *(ZAKLUKIEWICZ vs. WESTERN ELECTRIC CO., New Jersey Superior Court, Appellate Division. A 584–50. November 7, 1951.)*

Miracle Paints Are Here

"MIRACLE finishes that have long been promised by major paint manufacturers as a post-war development are at last a reality," according to Joseph C. Thompson, Jr., general paint manager of the Pittsburgh Plate Glass Company.

The days of obnoxious odors and tiresome priming and sealing coats are gone forever. Even the messy brush-cleaning job has been eliminated in the latex emulsion finishes. This formerly distasteful task has been eased considerably with the appearance of the alkyd-type flat wall paints. All of these new paints may easily be applied either by brush or roller coaters. The rollers may also be cleaned with ease or the cover may be discarded and a new one used for each paint application.

"In these carefully balanced paint formulations brush marks disappear and built-in leveling qualities provide a surface that even the most skillful paint craftsman could not provide with the materials he had available to him less than a decade ago," said Mr. Thompson.

"Furthermore, in all these new finishes the application of coat after coat and the long drying time between those coats have been eliminated. In most applications these paints do the job in just one coat and over a variety of surfaces. In those few instances where a second coat is required—on new plaster, for a sharp change in color, or where undercoats have deteriorated—only several hours drying time is required between coats. Usually, where it is necessary to use more than one coat, the second coat may be applied the same day.

"Of great importance in both the new alkyd-type and latex developments are the exceptional durability and washability. Grease, crayon, ink stains, lipstick, pencil marks, etc., are easily washed away without damage to or change in sheen or color of the finish. These nonporous coatings take a terrific beating too, they are resistant to marring and scuffing and will not chip, peel, crack, or wrinkle."

"Comparable gains have been made in the formulation of industrial finishes," Thompson adds, "with tailor-made coatings available for an unending range of applications."

DEPENDABLE DRESSINGS

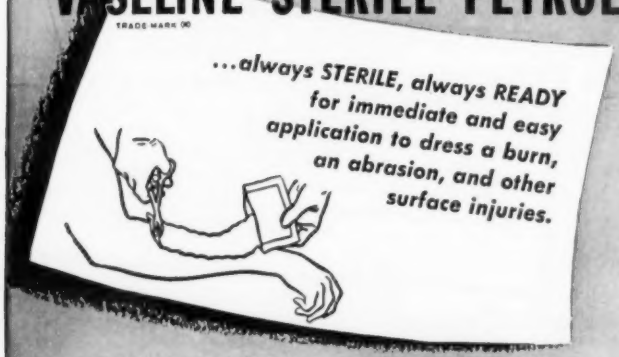
for FIRST AID, for EMERGENCY
for DISASTER, for DEFENSE

With a distinguished record of use by the medical services of the Armed Forces, by other governmental agencies, by hospitals, by emergency and disaster units, by industrial clinics and first-aid stations . . .

Now in three sizes:
No. 1: 3" x 36" (6 in carton)
No. 2: 3" x 18" (12 in carton)
No. 3: 6" x 36" (6 in carton)

Obtainable from your regular source of medical supplies

VASELINE STERILE PETROLATUM GAUZE DRESSINGS


TRADE MARK (R)
...always STERILE, always READY for immediate and easy application to dress a burn, an abrasion, and other surface injuries.

have been adopted by surgeons as standard procedure, by nurses as preferred matériel, by professionally-trained aid personnel as the compact, ready-made, ready-to-apply dressing of their choice.

CHESEBROUGH MFG. CO., Cons'd
Professional Products Division • New York 4, N. Y.

Specify these superior dressings in the foil-envelopes to your supplier.

VASELINE IS THE REGISTERED TRADE-MARK OF THE CHESEBROUGH MFG. CO., CONS'D

(For full details, use Key # R-19 on free Inquiry Card on page 77)

...Flexible, Neoprene Coated
HOOD *HEAVY-DUTY GLOVES*

Hood Rubber Company makes a complete line of rubber and plastic gloves for industrial uses. Write today for our illustrated catalog featuring the Hood Glove Guide — shows you "How to choose the RIGHT glove for EACH job".

HOOD RUBBER CO., Watertown, Mass.

(For full details, use Key # R-20 on free Inquiry Card on page 77)

Work Injuries Stay At Two Million Level

HOLDING close to the level of 1952, approximately 2 million persons experienced disabling injuries in the course of their employment during 1953. In view of the somewhat higher level of employment in most of 1953, however, the failure of the injury total to rise is a favorable indication of achievement in the efforts to bring about greater safety in employment.

Preliminary estimates by the U. S. Department of Labor's Bureau of Labor Statistics place the 1953 total of disabling work injuries for all classes of employment in the United States at approximately 2,031,000. This figure is essentially unchanged from the final estimate of 2,040,000 for 1952.

The 1953 estimate includes approximately 15,000 deaths and 84,000 injuries which resulted in some permanent disability, such as the amputation of a body member or the permanent-impairment of some function of the body. The latter group included some 1,500 cases in which the disability was serious enough to completely incapacitate the injured persons for any gainful employment for the remainder of their lives. The balance of the estimate, approximately 1,935,000, consisted of temporary injuries which disabled the workers for one full day or more, but from which the injured persons recovered without any permanent ill-effects.

These injuries resulted in the loss of approximately 41,000,000 man-days during the year—equivalent to a loss from the labor force of 137,000 full-time workers. When additional allowance is made for the future effects of the deaths and permanent physical impairments, the total economic time loss amounts to about 206,000,000 man-days—equivalent to a year's full-time employment of about 687,000 workers.

Mining was the one industry group to show substantial improvement in its injury record. The total of 61,000 work injuries in this industry represented a 19 percent decrease from the previous year—considerably greater than the 5 percent drop in average mining employment. Coal mining enjoyed the safest year on record, with fewer deaths than any previous year in history and a 25 percent overall reduction in the number of work injuries. The public utilities industry continued to show improvement in its safety record, with reductions in the volume of injuries in the telephone, gas and electric utilities.

In construction, transportation, and trade, the volume of injuries increased slightly. Within the transportation group, however, railroads enjoyed a safer year, with about 4 percent fewer work injuries in 1953 than in 1952, and with a lower rate of injuries per million man-hours.

In manufacturing, an improvement in the injury rate was offset by an average level of employment. The estimate of 408,000 work injuries for 1953 is unchanged from the final figure for 1952, despite a 4 percent decrease in the injury-frequency rate.

"What do you mean—

'I'm Polishing my Floors with Red Ink'?"

Red Ink because you're wasting money in materials and labor. You strip the wax off your floors every few weeks, then re-wax.

Red Ink because you're paying hidden costs, too. Each time the wax hardens, your floors get slippery. An employee falls, sprains an ankle, and misses a week's work. You hire temporary help. That's **two** salaries for **one job**. And the greater the number of accidents, the higher your insurance premiums.

Here's how LEGGE gets you out of the Red

LEGGE Safety Polishes cut your material and labor costs because one application stays on your floors *longer*. Only rarely do LEGGE Polishes need stripping. They cut all other costs down to a whisper because they give you *slip-resistant* walking surfaces. Many hospitals and industrial establishments report an end to slip-accidents on their floors. You save on absenteeism, production bottlenecks and, very likely, on your insurance premiums.

Have a LEGGE Safety Engineer prescribe a Maintenance program for *your* floors. *Safety* is his business. No charge or obligation. Want further information? Clip coupon or write today.

Walter G. LEGGE Company, Inc.
Dept F-5, 101 Park Ave., New York 17, N. Y.
Branch offices in principal cities

YOU'RE SAFE WHEN YOU WALK ON LEGGE
LEGGE SYSTEM of Safety Floor Maintenance

Walter G. Legge Company, Inc. F-5
101 Park Ave., New York 17, N. Y.

Gentlemen:

☐ Send full information on LEGGE Safety Maintenance.

☐ Have a LEGGE Safety Engineer call to examine my floors. No charge or obligation to me.

Name_____

Firm_____

Street_____

City_____ Zone____ State_____

(Use Key # R-21 on Inquiry Card on page 77)

INSIDE THE TRADE

Penn Optical Appoints

THE Pennsylvania Optical Company of Reading, Pa., manufacturers of head and eye protective equipment, have announced the following sales appointments:

Mr. Richard N. McCord will serve the Boston area from headquarters at 19 Neillian Way, Bedford, Mass. Mr. McCord joined the Penoptic team after separation from the U. S. A. F. in which he served as Squadron Personnel Officer. He is a graduate of Pennsylvania State College.

Mr. Regis H. Voye will serve the Buffalo area from headquarters at 285 Parker Avenue, Buffalo, N. Y. Mr. Voye was formerly employed as Ass't. Safety Supervisor for the Dravo Corp., Pittsburgh, Pa.

New Vice-President and Sales Head at Pyrene

VICE President for many years of the C-O-Two Fire Equipment Company, Maynard A. Laswell also has been made Vice President in charge of sales of the Pyrene Manufacturing Company, according to an announcement by S. R. Baker, President and Chairman of the Board. Mr. Laswell was the founder of the C-O-Two Fire Equipment Company on the Pacific Coast. The affiliated companies have general offices and factories in Newark, New Jersey and manufacture a complete line of approved fire extinguishers, air foam playpipes, carbon dioxide and air foam fire extinguishing systems, as well as smoke and heat fire detecting systems. Under Mr. Laswell sales, advertising and merchandising of all products will become unified.

Arthur F. Ratzer has also been named Vice President of Pyrene Manufacturing Company. Mr. Ratzer first joined The Pyrene Company, Limited, in London in 1935. Starting as a chemist in the Research Department he subsequently was in charge of chemical manufacture, served as Assistant to the Chief Engineer and later became Manager of CO_2 Division and Manager of the Foam Division. Since February 1953 he has been Executive Assistant to the President. He is also President of the Chemical Concentrates Corporation, makers of fire extinguishing compounds, Fort Washington, Pennsylvania.

Pittsburgh Plate Glass to Build Research Lab

PITTSBURGH Plate Glass Company has announced that a 45-acre tract in Harmar Township, near Pittsburgh, has been purchased as the future location for a Glass Research Laboratory. The glass research program will now operate in two sections—development and product control, and basic and applied research. The Company plans to utilize the Harmar Township location for a laboratory devoted to basic and applied research.

10th Anniversary

THE Albert W. Pendergast Safety Equipment Company, Philadelphia distributor of safety items to industry, is celebrating its tenth anniversary.

The company, having outgrown its original quarters at 1114 W. Erie Avenue, recently moved to larger offices and warehouse at 6913 Tulip Street, Philadelphia. It currently carries more than six hundred types and variations of safety equipment, and serves industrial plants in Eastern Pennsylvania, Southern New Jersey, Delaware, and Western Maryland.

Staff Addition for Cambridge Wire Cloth

THE Cambridge Wire Cloth Company, Cambridge, Maryland, has announced the appointment of Mr. Richard C. Carmean to its sales engineering staff. Mr. Carmean will assist Mr. Fred L. Stevenson in sales and service work in the Ohio-Michigan-Eastern Indiana territory.

Ansul Appoints

ANSUL Chemical Company announces the appointment of Richard M. Baker as Advertising and Sales Promotion Manager. Mr. Baker, who has been with the company 6 years as Publicity Manager, is a graduate of Northwestern University.

Ansul has also named Brad Sebstad as Publicity and Publications Manager. Mr. Sebstad is president of the Wisconsin Industrial Editors Association and a member of the executive committee of the International Council of Industrial Editors. He is a graduate of the University of Wisconsin's School of Journalism.

Parker Gets New Distributor

THE appointment of Big River Equipment Co., Inc., 1344 W. Third St., Davenport, Iowa, as a franchised distributor for floor sweepers is announced by F. R. Moore, vice president of Parker Sweeper Co. Big River will distribute Parker products, including manual and motorized floor sweepers and utility carts, throughout the middle and eastern portions of Iowa.

Clark Appoints New Dealer

CLARK EQUIPMENT COMPANY has appointed the Crunkleton Company, 5324 McCorkle Avenue, S.E., Charleston, W. Va., distributor of the company's full line of materials handling equipment, including fork-lift trucks, towing tractors, powered hand trucks, and carriers. The new dealership is under the management of Leslie D. Crunkleton, Jr.

for extra long service

No. 225-14 leather-faced asbestos gauntlet glove.

To be sure of the Genuine, Demand this Trade Mark.

leather-faced asbestos gloves

These leather-faced asbestos gloves employ one piece construction from tip to top. They are expertly designed to eliminate the usual weak seam at wrist and sides; are full cut, double stitched and carefully made from Underwriters' Grade 2½ lb. asbestos cloth. All wearing surfaces are covered with chrome leather specially tanned to resist heat. One of the longest wearing asbestos gloves you ever saw. For hard service, especially where hot rough articles must be gripped firmly. Standard 11", 14" and 23" lengths. Lined or unlined. (Special lengths on request.)

Other styles of leather-faced and plain asbestos gloves and mitts available.

Send for our catalog showing a complete line of Safety Apparel and Hand Protection.

INDUSTRIAL GLOVES COMPANY
A CORPORATION

1750 Garfield Street, Danville, Illinois • (*In Canada: SAFETY SUPPLY CO., Toronto*)

(For full details, use Key # R-22 on free Inquiry Card on page 77)

a little thing like a salt tablet* can prevent a big thing like accidents

It's an established fact that as the heat curve goes up, so does the accident rate. Salt sweated out must be replaced, or else your workers become easy victims of *heat fatigue*. When this happens, carelessness results and costly accidents can occur.

***Morton Yellow Impregnated Salt Tablets** combat this safety threat easily, safely and inexpensively. Their controlled action gives *immediate* relief *without causing nausea,* as each salt crystal is thoroughly impregnated by a special patented process that controls the tablet's rate of dissolving. In this way, salt is replaced *immediately,* but at a *gradual* rate.

Morton Patented Impregnated Salt Tablets are included in a new Disposable Dispenser. A plastic and a heavy-duty aluminum dispenser are also available, as are plain salt tablets.

If your local safety equipment distributor cannot supply you, write:

MORTON SALT COMPANY
Dept. S-A 15, 120 So. La Salle St.
Chicago 3, Illinois

(For full details, use Key # R-23 on free Inquiry Card on page 77)

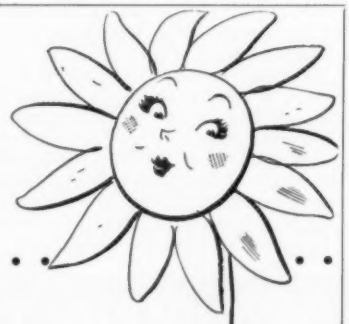
Iron Age Shoes Appoints Salesmen

JAMES H. CHILDS, JR., Sales Manager for Iron Age Safety Shoes, Pittsburgh, Pa., has announced the appointment of Jack H. Tolbert and Charles E. Kremis to the company's sales staff.

Mr. Tolbert, who has completed the company's training course at its factories in Wisconsin, is well-known in the safety field. He was with United States Safety Service for about 6 years before joining the company. His territory will cover the state of Texas and sections of Louisiana and Oklahoma.

Mr. Kremis, who has also completed the company's training course, was formerly connected with J. C. Penney Company. His territory will cover Northern New Jersey, Long Island, Brooklyn and Manhattan, with headquarters in Elizabeth, New Jersey.

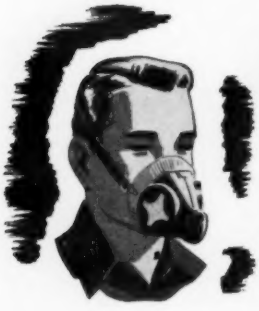
BE FRESH...
STAY FRESH



wear a
Dupor No. 40
The Respirator That is U.S.B. of M. Approved for Type A Dusts

Guards against pneumoconiosis and silicosis producing dusts. Has over 40 sq. in. twin filter area. Sanitary face cloth. Soft rubber face mask. "Controlled breathing" valves. Wearer has a panorama view with no blind spots. Unusual rubber, felt and plastic construction makes it extra durable, no denting or bending possible. Efficiency remains unimpaired even after rough treatment.

Sample sent $3.00 pp



wear a
Dupor No. 4
The Respirator For Dust, Fumes, Paint Spray

Double filters provide easy breathing. Soft rubber face mask gives air-tight fit. Sanitary face cloth protects against dermatitis or chafing. Has patented DUPOR valves for "controlled breathing," and panorama view without blind spots. A prime favorite for years!

Sample sent $2.00 pp

For the best in eye protection get H. S. Cover's Gas-Tight, Fog-Proof Goggles. . $2.00 pp

H. S. COVER, South Bend, Ind.
(For full details, use Key # R-24 on free Inquiry Card on page 77)

John B. Moore Changes

THE John B. Moore Corporation, Nutley, N. J., has elected to board membership and appointed to vice-president, John A. Campbell. John B. Moore, president of the company announced the appointment of I. John Snider, as sales engineer for the lower Michigan area.

Four of the solvents produced by the corporation have been certified for use as ship's stores by the United States Coast Guard as follows: Solvent M-2, Per-Trolene; Solvent M-3, Frigisol; Solvent M-5, Cineclene; Solvent M-6, Oxylene.

Buffalo Fire Has New President

THE Buffalo Fire Appliance Corporation has elected W. E. Tromanhauser president and made him a member of the Board of Directors.

Mr. Tromanhauser joined the company in 1940 as a District Manager. In January, 1949 he was appointed General Sales Manager. In July, 1950 he was elected Vice President and General Sales Manager of the corporation.

Hose Accessories Company Promotions

FORMERLY sales manager of the Le-Hi Division of Hose Accessories Co., Phila. 32, Pa., A. T. Dewees has been appointed sales promotion and advertising manager of both the Le-Hi and Champ Divisions of the company. Coincident with this announcement is the appointment of Fred Starr as General Sales Manager for all products manufactured by both the Le-Hi and Champ divisions.

Waco Adds New Factory

COMPLETION of a new 18,000 square foot, one story branch office and factory on West 130th Street in Cleveland, Ohio, is announced by the Waco Manufacturing Company, national manufacturers of steel scaffolding and shoring equipment. H. P. Albrecht, President, stated that the plant,

which is constructed on a 3½ acre site, will house branch offices, welding bays, paint shop, assembly sections, warehouse and shipping facilities for both rail and truck. The building is of masonry and steel frame construction and is faced with brick.

Hillyard Acquires New Plants

HILLYARD Chemical Company, floor treatment manufacturer in St. Joseph, Missouri, in order to better serve expanded operations, announces that its eastern and western sales divisions have opened new plant facilities in Passaic, New Jersey, and San Jose, California. Now in full operation, the new buildings are providing more direct facilities for distribution of company products and floor service in east coast and west coast areas.

Clarke Sanding Machine Company Appoints

PHIL A. BRADY, former sales representative, has been named divisional sales manager for the Clarke Sanding Machine Company, Muskegon, Michigan, for territory comprising western Arkansas, the Texas panhandle, and Oklahoma. He will headquarter at Tulsa, Oklahoma.

Magcoa Elects Vice President

WILLIAM JOHANSEN, general sales manager of Magnesium Company of America, East Chicago, Indiana, has been elected vice president in charge of sales, it is announced by Miles L. Abel, executive vice president. Johansen, prior to being apointed general sales manager two years ago, served as southwestern division manager.

MSA Announces New Engineering Director

APPOINTMENT of Charles W. Punton as director of engineering of Mine Safety Appliances Company, Pittsburgh, Pa., has just been announced by George H. Deike, Jr., vice-president.

Mr. Punton has been with the company since 1929. He started as an industrial engineer and, in 1941, was named works manager. A graduate of the University of Kansas, Mr. Punton also received M.S. and I.F. degrees from the University of Pittsburgh.

DeBothezat Fans Increases 2 Territories

DEBOTHEZAT Fans Division, American Machine and Metals, Inc., East Moline, Illinois announces that J. M. Pettingell Associates will cover the state of Rhode Island for DeBothezat Fans in addition to their present territory of Maine, New Hampshire, Vermont and Eastern Massachusetts. Pettingell's offices are at 201 Devonshire Street, Boston 10. The territory of the Upstate New York representative, A. H. Burnap, has been increased to include the Albany-Schenectady area. Mr. Burnap operates from 940 Lancaster Avenue, Syracuse 10.

GET THE FACTS ABOUT—

Lightfoot TREET

POWDERED SKIN CLEANSER

THE MOST EFFICIENT SKIN CLEANSER MADE!

A HEAVY DUTY SKIN-CLEANSER without a peer in the industrial field. It has a high anhydrous content and is superfatted for extra mildness. This super mild soap is scientifically blended with an edible corn meal scrubber and a special skin emollient to give thorough, safe cleansing to the dirtiest hands.

COMMODORE—Same formula as "Treet" but extra coarse. Ideal for those who prefer a "rough feeling" soap, yet one that will leave the skin soft and smooth.

An Invitation—We will be glad to send detailed information and prices on these products, and invite you to ask for free sample quantities. No obligation, of course.

LIGHTFOOT BAR SOAPS

PLAIN CUT
Made for industrial use—office washrooms, plant showers, etc.

"24 HOUR" DEODORANT SOAP
A mild toilet soap containing G-11 (Hexachlorophene).

AVADERMA DRY SKIN SOAP
Contains milk solids and lanolin for extra mildness.

LIGHTFOOT SCHULTZ COMPANY
380 MADISON AVE., NEW YORK 17, N. Y.
Send trial sample and information on the following:

TREET ☐ COMMODORE ☐ PLAIN CUT ☐
"24 HOUR" DEODORANT SOAP ☐
AVADERMA DRY SKIN SOAP ☐

Firm .....
Individual .....
Address .....
City ..... Zone ..... State .....

(For full details, use Key # R-25 on free Inquiry Card on page 77)

For Safety
Guardi-Ann Hat

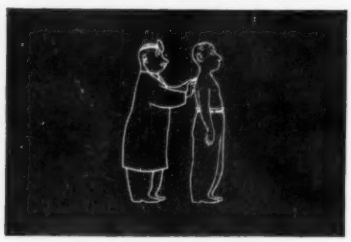
Combines utmost protection and style. Exclusive patented features found in no other hat.

Write for Free Sample or Order Direct from us

$15.00 dz.

CHIC MAID HAT MFG. CO., Inc.
630 HIGH STREET
BUFFALO 11, N. Y.

(Use Key # R-26 on Inquiry Card on page 77)



...before it TALKS

...is the way our doctors put it—"Our chances of curing cancer are so much better when we have an opportunity to detect it *before it talks.*"

That's why we urge you to have periodic health check-ups that *always* include a thorough examination of the skin, mouth, lungs and rectum and, in women, the breasts and generative tract. Very often doctors can detect cancer in these areas long before the patient has noticed any symptoms.

For more life-saving facts phone the American Cancer Society office nearest you, or write to "Cancer"—in care of your local Post Office.

American Cancer Society

SAFETY ACHIEVEMENTS

AT A recent Safety Training Seminar held in Chicago by the Fifth Army, it was announced that as a result of its aggressive safety program in 1953 there were 51 fewer accident fatalities in the Fifth Army operations compared with 1952. This improved record amounted to a savings of 339,000 man-days and a monetary savings of 1 million dollars.

HOW many lost-time accidents do you expect among the men in your company or department in the next 5 years?

If the question had been put to Consolidated Edison's Holder Maintenance and Painting Bureau back in 1949, the experience of the previous 5 years would have led to a rather gloomy prediction—about 30 lost-time accidents averaging around 23 days, some serious bruises, a crushed hand, several broken legs, one death. However, because of the department's safety program, the 300 painters, riggers, demolition, construction, and tool room mechanics have recently completed 5 years' work without a lost-time accident.

THE 18,000 men and women of the Westinghouse Electric Corporation's East Pittsburgh Divisions have just completed the safest year in the plant's 58-year history, it is reported recently by L. B. McCully, vice-president in charge of the Divisions.

In commenting on the achievement, Mr. McCully said "The safety performance of our plant is not the result of the efforts of any individual or any particular group of individuals. Whether or not we have a safe place to work depends on the conscientious efforts of every employee. During 1953, by making proper use of safety equipment, and observing safety regulations, our employees made their own jobs, and the jobs of their fellow-employees, much safer."

The employees worked a total of more than 37½ million hours with an accident frequency rate of 1.9, and an accident severity rate of only 0.10. Several outstanding divisional safety records were also made in 1953. The entire Switchgear Division worked from January 14 to May 20—a total of 3,472,196 hours—without a disabling injury. The Transportation and Generator Division worked from July 27 to October 27, or 3,300,950 hours, without a lost time injury. Even though foundry work is sometimes considered hazardous, the Trafford Foundry of the Feeder and Service Division completed 10 months of activity without a single lost-time accident.

NEW high records in industrial safety performance were registered in 1953 by Celanese Corporation of America, as the company-wide accident frequency rate dropped to 1.3 for each million man-hours worked in comparison with a 1952 national average of 8.4 accidents per million man-hours worked for all American industry.

This achievement came to light today with the announcement of results of the company's safety contest in which all plants and facilities competed for the annual Harold Blancke Safety Award. The top honor for 1953 was captured by the Cumberland, Maryland, acetate yarn producing plant with a record of less than one lost-time accident for each million man-hours.

The actual accident frequency rate of the Cumberland plant was 0.81 per million man-hours worked, which represented a major improvement over the preceding year's rate of 3.53. On two separate occasions during the year the plant achieved a record of operating 2,000,000 continuous man-hours without a lost-time accident.

Certificates of commendation in the annual contest were won by seven units which scored perfect records by not having a single lost-time accident. They were the Hopewell, Virginia, dyeing and finishing plant; the Burlington, North Carolina, spun yarn plant; the Pampa, Texas, chemical plant; the Summit, New Jersey, and Clarkwood, Texas, research laboratories; the Central Trucking facility at Cumberland, Maryland, and the New York Warehouse.

The Burlington, North Carolina, plant of the company has not had a lost-time accident in approximately four and a half years. The last accident of this nature was reported on September 23, 1949.

A SUPERIOR Accomplishment award has been presented to William W. Daughtrey, safety director at Camp Gordon for the past four years, after a review of the statistical record of the Safety Office revealed that remarkable progress in safety management has been made. The safety director performs his duties under the broad supervision of the Camp Gordon Safety Council, which is presided over by Colonel P. A. Shields, Post G-1.

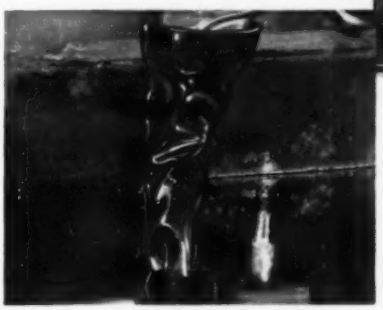
Using the Third Army safety record as a yardstick, the Camp Gordon safety program lowered the military personnel injury rate 29 percent under the average rate for military establishments in the seven Southeastern states of the Army area.

Injury rate of civilian personnel at Camp Gordon was lowered by 20 percent. These figures cover the period from 1 Jan. to 30 Sept. 1953. A variation of almost 50 percent in favor of Camp Gordon was shown in a comparison of Camp Gordon figures with Department of the Army figures in personal injuries.

The frequency rate of all injuries to military personnel decreased from 7.3 injuries per 100,000 man days of service in 1952 to 5.7 in 1953, a percentage reduction of over 21 percent.

This rate for civilian personnel in the same period of time was a decrease of 54 percent.

EXTRA PROTECTION AT THESE TWO SPOTS



CUFFS UP
Here's control of injurious liquids — keep arms and inside of gloves dry.

CUFFS DOWN
Extra margin of safety — a two-inch longer gauntlet for really plunging in.

PATENTED
SURETY TURN-CUFF INDUSTRIAL GLOVES

Surety Turn-Cuffs are available in a wide range of natural and synthetic rubber types created for specific jobs for long wearing life. As a positive protection against dermatitis and allergies created by injurious liquids you'll find a Turn-Cuff style to meet your needs as recommended by so many safety directors and insurance companies. But even just for wearing qualities you'll find Turn-Cuffs the superior glove. From your Jobber or write direct.

THE SURETY RUBBER CO.
Carrollton, Ohio

In Canada, Safety Supply Co., Toronto

(For full details, use Key # R-27 on free Inquiry Card on page 77)

I KNOW I'M SAFE... with WOODEN SOLES!

Wooden Soles Insulate
Strong steel toe

FOR THE FACTORY...

No. 504-S Sizes—5-13
Wear a **Reece "Strong Toe."** Comfortable leather uppers. High, roomy steel toe protector, heat-resistant wooden sole. Have comfort-safe feet at work in oil refineries, foundries, steel mills, factories.

No. 351

...FOR THE FOUNDRY

An improved Reece "Hot Foot" Sandal with two strong sole leather hinges provides real insulation for those hot jobs. Straps on quickly over any shoe . . . it bends.

Sizes—Small-Medium-Large.

WRITE FOR CATALOG

There is no substitute for Reece Wooden Soles

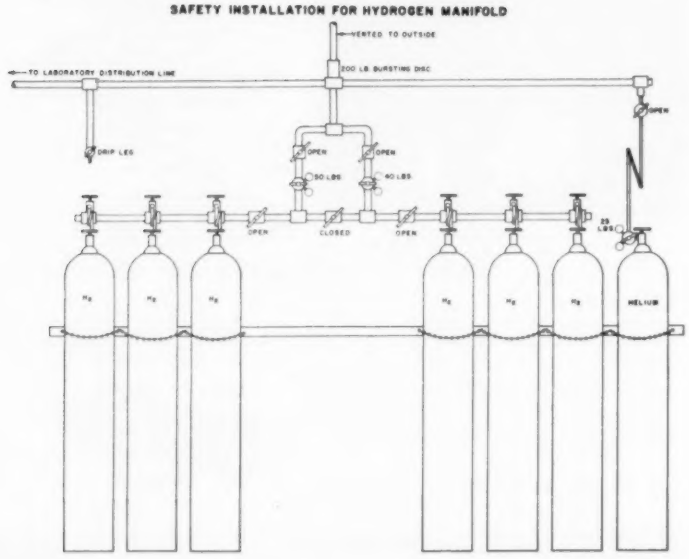
REECE WOODEN SOLE SHOE CO.

Dept. SM 4 Columbus, Nebraska

(For full details, use Key # R-28 on free Inquiry Card on page 77)

"SAFETY MAINTENANCE" Salutes a Safety Idea

Hydrogen Manifolds And Lines Made Safe



THE use of hydrogen in heat-treating and brazing is standard laboratory practice and an inherent explosion hazard, especially if the gas is supplied from a remote reservoir and piped to the various operating stations.

One general practice is to allow hydrogen to flow into an enclosure (such as a bell jar) and escape into the room. Reliance is placed on the hydrogen being above atmospheric pressure and maintaining a continuous outward flow. If the hydrogen pressure falls below that of the atmosphere, air and hydrogen will mix. When about 7 to 73 percent of hydrogen is present in the mixture an explosion can occur, if the temperature in the operating chamber is at or above approximately 500° C, the combustion point of hydrogen. Differential pressure controls and relay devices which automatically indicate a pressure change are commercially available, but these devices will not prevent an explosion from occurring within the operating chamber. Now an installation has been developed which purges the entire system, including the operating chamber, with an inert gas if hydrogen pressure falls below a safe figure. This development by the Diamond Ordnance Fuze Laboratories, Ordnance Corps, Dept. of the Army is described in a report by Robert M. Carson.

How It Works

In a typical installation there may be two banks of hydrogen tanks connected through a pressure-reducing network, as shown in the central portion of the accompanying figure. Since, in parallel banks of gas cylinders regulated for different pressures, there will be no gas flow from the lower-pressure bank until the pressure from the other bank falls to or below the lower pressure, here is what happens:

When the 40-lb reducers and their associated valves are correctly set, the higher-pressure (50-lb) bank of cylinders will supply gas until its pressure falls to 40 lb, when the lower-pressure (40-lb) bank will supply the gas automatically, permitting continued operation of the stations while the exhausted cylinders are replaced. Human error in setting the valves or reducers, failure to replace exhausted tanks, or mechanical failure of component parts of the system can permit the hydrogen supply to fall below atmospheric pressure, with a consequent mixture of air with the gas in the treatment chambers.

In the safety installation, shown in the drawing, a cylinder of helium, an inert gas nearly as light as hydrogen, has been added, together with a network which causes it to purge and flood the hydrogen line in case of failure of pressure in the hydrogen supply. The pressure regulator on the helium line is normally set from 10 to 20 lbs lower than that of the hydrogen line (in this example, it is set as 25 lbs).

Just as the lower-pressure hydrogen bank commences to flow when pressure falls to an equal value in the higher-pressure bank, the helium begins to flow when the hydrogen line pressure drops to the regulated pressure of the helium. Thus, the hydrogen remaining in the system is rapidly expelled until fully replaced by the safe helium; and a dangerous mixture of air and hydrogen is never allowed to take place within the treatment chamber—the potential explosion area.

Code Clarification

IN THE article on the New York State Safety Code for Explosive Powered Tools in the April issue of "Safety Maintenance," it was stated that the code required each tool to carry a serial number for its individual identification and also the approval number of the N. Y. Board of Standards and Appeals.

To prevent any possible misinterpretation of this statement, it should be noted that in addition to the serial number the code requires that approved tools carry either the approval number or the *approved model number.*

Learning . . . . . the hard way

RELIEVE THAT PRESSURE!

AN attempt to remove the head from a positive choke on a gas well while the line was under pressure recently killed an engineer. The man had closed the wing valve near the wellhead and had closed the adjustable choke preparatory to making a back-pressure test of a gas-distillate well in order to determine the well potential. With 2,536 pounds per square inch pressure in the line, he attempted to remove the head of the positive choke to replace the beam. When this occurred, the choke flew off in the engineer's face. The mistake here was failure to relieve the pressure on the line before removing bolts, nuts and flanges. The engineer will never be able to correct the mistake. He learned the hardest way of all.

UNBELIEVABLE? . . . YES, BUT TRUE? . . . UH HUH!

THIS accident is one for the books. As the story goes, the employee was standing on the top of a drum of hot grease, forcing the lid into place with his feet! The lid tilted, and he fell into the drum feet-first, sustaining burns up to his knees. How anyone could have let the worker try such a foolish thing is amazing . . . and how he could have thought of doing it is even more amazing. There may have been improper supervision, lack of instruction, and an absence of tools, but how the worker himself could deliberately expose himself to injury for no reason is a mystery. File it under "why safety personnel get gray."

HOW MUCH IS A "LITTLE" VOLTAGE?

A SHEET metal worker was boring holes with an electric drill in galvanized iron siding. The drill shorted and the worker lost his life. One hundred and ten volts, the common voltage for this and many types of electrical tools, is deadly. It causes more fatal and serious accidents than the so-called high voltages. This danger can be traced in part to its common usage and the fact that it is more exposed to contact. More importantly, people simply don't take 110 volts seriously. They are familiar with it, use appliances which frequently run on it, and in general, simply suppose that shock from it must be negligible. They are quite wrong, as this fatal accident proves. All electrical equipment with metal shells must have the shell grounded to be safe. This applies in the shop, in the home, and in the office.

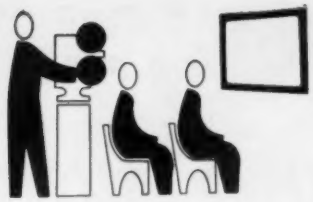
A SAFETY INGREDIENT

THE ingredients are many that go into the safe operation of an industrial process. The work must be thoroughly understood from a safety viewpoint, it must be carefully planned, the materials must be safe to handle or made safe, the worker must be correctly instructed on how to perform his job, all necessary personal protection must be used and . . . one ingredient often forgotten . . . the proper tools to do the job. A ladder that's too short, a machine that's too small, a screwdriver that's too large or a bit that's too long . . . all of these can make a job dangerous, regardless of the safety habits of the workman.

The case we have in mind concerns a pump operator who was changing a tank valve. The wrench slipped, and he scraped his hand on a steel girder. Subsequently the wrench has been redesigned with an extension to the handle so that the operator will not have to put his hands into the congested area while he works.

BANG! BANG! YOU'RE DEAD!

A CARPENTER, working in a room next to an area where production was going on, fired a 3-inch stud into a partition he thought was concrete. It was lath and plaster. The stud went through the partition and buried itself in the heart of a man working in the next room, killing him instantly. All the regret and desire to correct the mistake won't help in this accident. It's too late. When handling any kind of material or tool in industry it is essential to be careful, but when handling a lethal weapon such as a stud-gun a man has the responsibility of other lives on his hands. Before doing anything with such a weapon, the operator must know exactly what he is doing and what he is doing it to. The principle involved in this accident is just the same as the tragic mishaps in which children, playing with a gun, shoot someone because they "didn't think it was loaded."



Safety on Film

Catalog of Free Films

THE Princeton Film Center, Inc. has compiled a new list of free loan 16mm sound films. Many in full color, these motion pictures are informative and entertaining and well suited for clubs, colleges, industrial and adult audiences. A wide range of subject matter offers timely and thoroughly interesting program material.

All requests from users should be sent directly to The Princeton Film Center, Inc., Princeton, New Jersey.

Grinding Wheel Film

A DRAMATIC, full-color sound film, titled "Play It Safe," shows how proper usage can prevent one of industry's most dreaded accidents—the "bursting" of a damaged grinding wheel rotating at thousands of surface feet per minute.

"We have made this picture to show steel mill, foundry and other industrial people how grinding wheels should be handled, stored, mounted and used for maximum safety," says Paul Brown, president of the Peninsular Grinding Wheel Sales Corporation, which produced the film.

Most of the 20-minute picture is devoted to showing how proper care in handling and using grinding wheels can prevent accident—but also dramatizes what can happen when grinding wheels are abused. One scene, for example, shows in slow motion a damaged grinding wheel bursting at high speed. The potential danger, as the fragments are hurled with terrific force, is calculated to plant deep in the viewer's mind the necessity of proper grinding wheel care.

"Play It Safe" is intended, primarily, for showing to the supervisory personnel of steel mill and foundry cleaning rooms, foundry society meetings, safety engineer groups, and operators of grinding machines. The 16 mm. film is being loaned, free of charge, to any company upon receipt of a request on the firm's letterhead. Address inquiries to Peninsular Grinding Wheel Sales Corp., 729 Meldrum, Detroit, Mich.

Film on Sprinkler Systems

"DON'T gamble with fire, the odds are against you," is the dramatic injunction delivered by "Crusaders Against Fire," a motion picture produced for the National Automatic Sprinkler & Fire Control Association by The Jam Handy Organization.

Fire takes 30 American lives and 2 million dollars worth of property every 24 hours. Despite all precautions and the organized effort of every firefighter in America these losses persist. Nearly half the number of business firms which are razed never re-establish themselves. Three thousand schools burn each year. Dramatizing these and many other equally staggering facts, the 14-minute color movie shows the unpredictable circumstances which kindle this destructive menace; the inevitable oily rag, the watchman who is in another part of the warehouse just at the critical moment, the cigarette butts trod upon but not put out.

Using this film, which combines the techniques of animation and real photography, the Association demonstrates its answer to fire hazards: fire control by an automatic sprinkler system, which is designed to extinguish the fire while it is still small. During the time it takes for help to reach the scene, the automatic sprinkler system contains the fire or extinguishes it completely.

Figures show, amazingly enough, that not a single life has ever been lost through fire in buildings adequately protected with sprinkler systems.

Prints for 16 mm. projectors may be obtained for showings by writing to the National Automatic Sprinkler and Fire Control Association Headquarters, 205 East 42nd Street, New York City.

Safe Driving Film

AMONG the new films shown at the Greater New York Safety Convention was "The League of Frightened Men" made by National Dairy Products Corp. to promote safe driving and accident prevention among its own drivers. The 16mm. color sound film has a running time of 22 minutes and is available free of charge to truck-fleet operators, industrial groups, schools, clubs, civic and church organizations.

The safe driving principles illustrated in the film can be applied by all drivers. The locale of the film is a State Fair and Truck Rodeo. Action shots of three types of vehicles, an over-the-road truck, passenger car, and delivery truck, show how their drivers were able to avoid accidents. Their primary concern while driving is for the safety of others and each man explains how his own particular fear helps him avoid unsafe driving acts.

For complete information on booking the film, contact Mr. Carl C. Clements, Director of Safety, National Dairy Products Corp., 60 Hudson St., New York 13, N. Y.

New Film Announced On Spray Painting

SPRAY painters and others interested in spray painting will find a wealth of information in a black and white, sound 16mm. film, "Making the Most of the Spray Painting Method," which has been produced by the DeVilbiss Company, Toledo, Ohio, spray painting equipment manufacturers.

The film, which is a 45 minute feature, illustrates the 4 basic principles of spray finishing. These are: proper equipment, control factors important to achieve highest quality results, spray painting techniques, and the necessary care, cleaning and maintenance of equipment.

The opening scenes of the film features the basic equipment required for various spray painting operations. The functions and operations of each piece of equipment are discussed thoroughly. For example, in one of these scenes the basic difference between suction and pressure feed guns is shown and in another scene, the atomization principle is illustrated.

In the company's school, the film shows a trio of spray painters being given instruction in the most efficient technique for spraying variously shaped objects. The film also points out that a spray gun is a precision-built instrument which has been precision machined to give perfect atomization for the application of sprayed materials. The maintenance section of the film covers the air compressor and all related equipment as well as spray booths. In conjunction with the film, the company has prepared a booklet which covers the film highlights and can be used as a ready reference by the spray finisher. The company is planning to distribute the booklets to every person who views the film.

The film may be obtained for showings by writing directly to The DeVilbiss Company, 300 Phillips Avenue, Toledo 1, Ohio. Information about the DeVilbiss spray painting school is also available.

DOLCOWAX
FOR BEAUTIFUL FLOORS
Plus IMPROVED SLIP-RESISTANCE

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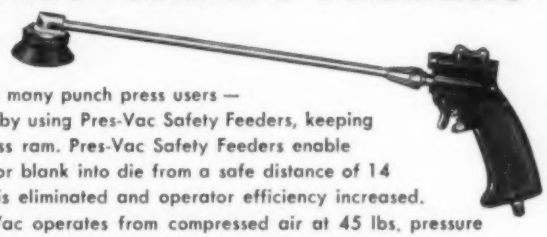

Western Stove Works, well-known California manufacturer — like so many punch press users — saves workers' fingers by using Pres-Vac Safety Feeders, keeping fingers away from press ram. Pres-Vac Safety Feeders enable operator to feed part or blank into die from a safe distance of 14 inches. Fear of injury is eliminated and operator efficiency increased.

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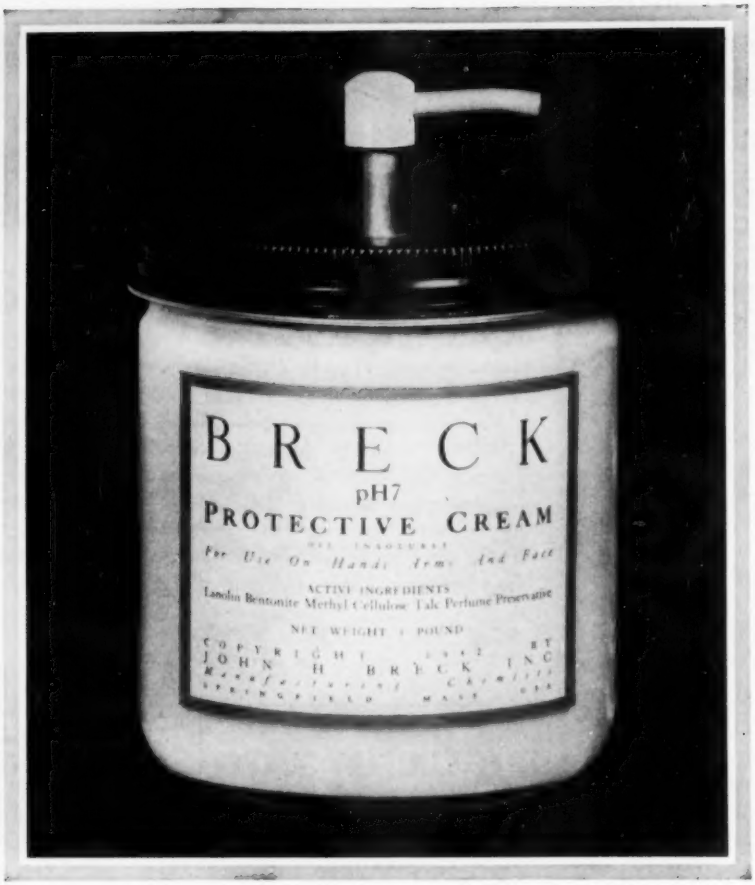

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Industrial Hygiene

Associate Editor
Jacob A. Goldberg, A.M., Ph.D.

Radiation Handbook

"PROTECTION *Against Betatron-Synchrotron Radiations up to 100 Million Electron Volts,*" National Bureau of Standards Handbook 55, is available for 25 cents from the Government Printing Office, Washington 25, D. C.

The present handbook attempts to supply the recommendations made by the National Committee on Radiation Protection as they apply to high energy electron accelerators of the betatron and synchrotron types. The protection requirements for operating personnel, hospital patients, and the public against the potential hazards of the accelerators are outlined. The hazards resulting from the various radiations produced by the sources are included, as well as those due to certain associated effects, such as noise, electricity, and ozone protection. Recommendations are also given on a consistent system of units and of measurement procedures that can be applied to radiations with energies above 5 Mev. Orders for the handbook from foreign countries must be in U. S. exchange and should include an additional one-third of the publication price to cover mailing costs.

Air Pollution Control Award

THE first and only award recognizing an individual's efforts to advance the technique, art, or science of air pollution control in this country was established at a meeting of the Board of Directors of the Air Pollution Control Association held at its executive offices at Mellon Institute, Pittsburgh.

The merit award is to be known as the Frank A. Chambers Award in honor of the early advocate of the "engineering approach" to air pollution control problems.

Chambers was one of the first technical engineers employed as head of a smoke control bureau and served in this capacity in the City of Chicago for over 40 years. He was Executive Secretary of the Air Pollution Control Association from the days when it was known as the Smoke Prevention Association until his death in 1951.

The Association, founded in 1907, provides a common meeting ground for industrialists, air pollution control officials, and other interested parties, to resolve their mutual problems in air pollution control.

Industrial Medicine Symposium

THE University of Oklahoma School of Medicine will hold its first postgraduate Industrial Medicine symposium on May 20 and 21 at the School of Medicine auditorium in Oklahoma City.

This program is one of several activities spear heading the inclusion of industrial medicine in the curriculum of the school. The meeting represents an effort toward bringing together industry, medicine, law, safety engineering and industrial relations for joint discussions of topics pertinent to these groups.

Subjects to be covered include: Recent Advances in Traumatic Surgery, Industrial Challenge to the Medical Profession, Aspects of Occupational Diseases of Interest to the General Practitioner, Fundamentals of Industrial Medical Practice, Mental Health in Industry, The Role of the Physician in Labor Relations, Industrial Problems of the Painful Back, Workmen's Compensation in Oklahoma, Current Psychosomatic Understandings, Rehabilitation of the Industrially Injured, Injury Case

(Continued on page 62)

OCCUPATIONAL dermatitis is the most frequent of all occupational diseases. It constitutes about two-thirds of all occupational diseases appearing before compensation boards. This does not tell the whole story, however, because only those cases of occupational dermatitis appear before compensation that lose at least one week from work. The large majority of cases of occupational dermatitis are not sufficiently severe to cost one week of work. Some workers may lose a day or two, but most of them work and get treatment at the plant dispensary or first aid station. Time is lost in obtaining this treatment and the efficiency of the worker is impaired.

The U. S. Public Health Service estimated in 1942 that occupational dermatitis entailed a yearly loss of more than 100 million dollars. This amount included medical bills, lost time, lost efficiency, compensation awarded by compensation boards and damages awarded by courts. The cost of medical care and wages have increased considerably since 1942, and the yearly loss from occupational dermatitis at the present time, considerably exceeds the 1942 estimate.

FEATURE

First article of a series on Personal Hygiene. Next articles will appear in June and July.

PROTECTIVE CREAMS—One way to keep dermatitis under control is to keep barrier and germicidal creams between your skin and the irritating chemical, harsh surface, or hazardous process. Since the cream must be washed off at the end of the day, the skin gets additional protection from this necessarily thorough cleansing.

Dermatitis Causes

The causes of occupational dermatitis must be considered in order to devise efficient methods of control. These causes can be divided into predisposing and actual causes.

While race, condition of a worker's skin, the season of the year, the worker's age and his manner of performing his duties, all play a role in predisposition to developing dermatitis from certain external occupational irritants, the most important predisposing cause by far is lack of personal and environmental cleanliness. A worker who keeps his skin, work clothes and machine clean, in a factory where there is good housekeeping is far less likely to develop dermatitis, than a worker who does not, especially when plant housekeeping is not good.

The actual cause of occupational skin diseases may be classified as mechanical, physical and chemical. The most important of these, by far, are the chemical causes which may be simply classified as inorganic and organic, and physiologically as primary irritants and sensitizers.

A primary skin irritant is a substance which in sufficient concentration and given a sufficient time will irritate the human skin. A primary skin irritant exerts a chemical action on the skin, denaturing it, or abstracting moisture, fats and waxes from it. The action is comparatively rapid if the concentration of the chemical is high, or it may be slow but cumulative if the concentration is low. Examples of primary skin irritants are strong acids, alkalis, caustics and solvents.

A sensitizer has no demonstrable chemical action on the skin at first contact, but so conditions the skin that, after five days or more, (the period of incubation for developing sensitivity), further contact will produce a dermatitis. Examples of pure sensitizers are certain dyes, perfumes, certain explosives and dilute solutions of certain primary irritants. Sensitizers vary in their sensitizing powers. Some affect many persons, as poison ivy; and others, such as dyes, affect only a few. Since primary irritants and sensitizers must come in contact with the skin for various periods of time before they can cause dermatitis, it is evident that preventing such contact will prevent dermatitis.

Preventing Contact

Contact of irritants with the skin can be prevented by (1) engineering safeguards over operations in which irritant chemicals are used (such safeguards are totally enclosed processes, properly placed exhaust vents, in addition to proper general ventilation of workrooms); (2) good factory housekeeping, which includes frequent cleaning of machines, floors and even walls and ceilings; (3) furnishing workers with protective clothing, adequate washing facilities, safe and efficient industrial skin

PROTECTIVE CLOTHING—Wearing material impervious to penetration by the irritant is a good way to control dermatitis. At clean-up, both the protective material and the skin must be washed.

cleansers and towels, and effective protective ointments; (4) educating the workers to keep clean and to use properly the protectives provided.

Properly selected protective clothing prevents external irritants from touching the skin. It should be made of the lightest and least heat retaining material which is impermeable to the irritant. For clothing to protect against fluids, mists and gases, impervious materials not affected by the irritant, such as rubber and plastic films should be used. Rubber and plastic gloves, sleeves and aprons are available, as are coveralls made of plastic laminated fabrics. These should be furnished to the worker and kept clean and in good repair. The same is true of respirators, goggles and gas masks.

Washing facilities in the form of washrooms, shower rooms and wash basins should be strategically placed in work shops, so that no worker has to walk more than

OCCUPATIONAL DERMATITIS AND ITS CONTROL

By LOUIS SCHWARTZ, M. D.
Washington, D. C.

INDUSTRIAL CLEANSERS—Use soaps and cleansers that disinfect as well as remove dirt from the skin. That's another good way to stop dermatitis before it starts.

100 feet to reach running hot and cold water, soap and towels. Paper towels have been found to be most desirable. Where shower baths are indicated after work, there should be enough of them so that no one need wait more than 20 minutes to take his turn in the shower. This means at least one shower for each 15 men going off shift. Regular bath towels should be provided where shower baths are necessary.

Skin Cleansers

Management should furnish industrial skin cleansers, because it is in the best position to judge whether the cleansers are suitable for the removal of the specific industrial soil without injuring the skin. For the removal of heavy soils such as oils and grease, granular industrial soaps are generally preferred. They consist essentially of powdered soap and a nonsoluble vegetable scrubber.

(Continued on page 64)

do you use POISONOUS carbon tetrachloride?

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Industrial Medicine Symposium

(Continued from page 59)

Handling, Current Industrial Hygiene Methods, Industrial Safety and Disability Evaluation.

The symposium is sponsored jointly by the School of Medicine through its Office of Postgraduate Instruction, the Liberty Mutual Insurance Company, and the Oklahoma Academy of General Practice.

Credit is given for attendance to the members of the Oklahoma Academy of General Practice and the registration fee will be $10. Those who are interested should register in advance with the Office of Postgraduate Instruction, University of Oklahoma School of Medicine, 800 N. E. 13th Street, Oklahoma City 4, Okla.

Data Sheet on Vinyl Chloride

A NEW safety data sheet on vinyl chloride has been published by the Manufacturing Chemists' Association. Vinyl chloride is a principal chemical component of an important class of resins used in the plastics industry. Chemical Safety Data Sheet SD-56 gives properties and essential information for its handling, storage, use and waste disposal. It includes a section on health hazards and their control.

Vinyl chloride is a liquefied gas whose vapors form flammable mixtures with air at all temperatures above 78° C. Aside from the risk of fire and explosion, vinyl chloride presents no other very serious problem in general handling. The presently accepted upper limit of safety as a health hazard is 500 ppm. In higher concentrations, it acts as a mild general anesthetic. ICC regulations require that the chemical be inhibited for purposes of transportation. MCA recommends that, in addition to or in combination with label or placard warnings required by regulatory agencies, all shipping containers of vinyl chloride should carry a precautionary label setting forth specific hazards to be avoided in handling the chemical.

The manual states that vinyl chloride should always be used with full recognition of its volatility, flammability, and polymerization hazards. Precautions should be taken both to keep the material enclosed and to eliminate sources of ignition. The necessary plant and engineering controls, ventilation, and procedures for cleaning and repairing tanks and equipment are described in detail.

Vinyl chloride is not a serious industrial hazard provided precautions are taken to avoid leaks or spills. Employees should be repeatedly warned of the anesthetic properties of the gas and instructed what to do if anesthetic effects are detected. The manual describes protective equipment but advises that it is not an adequate substitute for safe working conditions.

Copies of SD-56, Vinyl Chloride, may be obtained from the Manufacturing Chemists' Association, 1625 Eye Street, NW, Washington 6, D. C., at 25 cents each.

By MARK M. LUCKENS,
Consultant in Industrial Hygiene & Toxicology, New York

BENZENE

Compound:
Benzene
Synonyms: Benzol, Benzole, Phene
Formula: C_6H_6
Molecular Weight: 78.11

Physical Data

Appearance: Clear, colorless liquid
Odor: Characteristic, pleasant odor in low concentrations
Boiling Point: 80.09°C
Melting Point: 5.51°C
Vapor Pressure: 74.7 mm Hg. (20°C); 100 mm Hg (26.09°C)
Density: 0.8794 (26°C)
Vapor Density (air = 1): 2.7
Refractive Index: 1.50142 (20°C)
Flash Point (Closed Cup): 10°–12°F
Autoignition Temperature: 1000°F
Explosive Limits (air): 1.5%–8.0%
Solubility in water: 0.082 grams/100ml (20°C)
Solubility in organic solvents: Miscible with most common organic solvents

Industrial Uses

Solvent for rubber; formulation of paint removers, lacquers, varnishes, airplane dopes, type cleaners, etc.: chemical intermediate; solvent; etc. . . .

Maximum Allowable Concentration

American Standards Association: 100 ppm
American Conference of Governmental Industrial Hygienists: 35 ppm

Toxic Action

1. Disturbances of the blood forming organs. Benzene is, essentially, a poison of the bone marrow. It is also a narcotic.
2. Once injury to the bone marrow has been initiated, it progresses without further exposure to this material.
3. Pregnant women, young girls, and older people appear to be predisposed to benzene poisoning.

Symptoms of Exposure

A. Inhalation:
1. Acute
a. High concentrations: Euphoria, excitement, restlessness, followed by drowsiness, weakness, and depression. Death results from respiratory failure.
b. Low concentrations: Headache, nausea, dizziness, pallor followed by flushing, weakness in legs, tightness in chest, disturbances of vision, irritability, convulsive twitching of muscles, unconsciousness.
2. Chronic: Weakness, dizziness, palpitation, shortness of breath . . . aplastic anemia, leukopenia, leukemia.

B. Oral Indigestion: Severe gastritis in addition to systemic symptoms

C. Skin: Dermatitis due to defatting action of benzene. Systemic symptoms from this source have not been reported.

Laboratory Diagnosis

1: Urine analysis . . . ratio of inorganic to total sulfates.
2: Miscroscopic examination of the blood. Blood changes must be related to known exposure to benzene.

Detection and Analysis

Most methods depend on the nitration of the benzene to *m*-dinitrobenzene and the colorimetric determination of this compound. The benzol indicator is satisfactory provided it has been carefully calibrated and serviced. Three satisfactory methods for the determination of benzene are:

1. Sulfuric Acid—Formaldehyde Method. This procedure is simple and can be used for the qualitative detection as well as the quantitive determination of this aromatic hydrocarbon. Benzene gives an orange brown color when absorbed in a mixture of formaldehyde in sulfuric acid. For details, see: Dept. of Scientific and Industrial Research of Great Britain, Leaflet No. 4 (1939), which may be obtained from the British Information Service in New York City.
2. The most satisfactory chemical method for determining benzene in air is probably the method of Pearce, Schrenk, and Yant. This is detailed in U. S. Bureau of Mines Repts. Invest. No. 3302 (1936).
3. The Dolin modification of the Butanone method is an excellent procedure, especially when benzene homologs are also present. The method is described in Industrial & Engineering Chemistry (Analytical Edition) Volume 15, page 242, et seq. (1943).

Storage and Handling

Benzene is a flammable liquid whose vapors are highly toxic. It should be stored in a cool, well-ventilated place and at all times, be kept away from sparks, heat, or open flames. Containers should be sealed at all times and properly labeled. Employees should be warned

to handle this material only in well ventilated areas, avoid repeated or prolonged inhalation or contact with the skin.

Preventive or Remedial Measures

1. Establishment of a standard operating procedure for handling this material. Employee training in proper handling procedures.
2. Exhaust ventilation for operations involving the use of this chemical.
3. Substitution of less toxic chemicals, where possible.
4. Periodic urinary and hematological examination of all workers exposed to benzene. Frequent analyses of the working atmosphere for benzene is advisable.

Benzene Fires

Avoid use of water in fires of this compound. Carbon dioxide, carbon tetrachloride, dry chemical or foam are satisfactory materials for putting out fires of benzene.

Occupational Dermatitis

(Continued from page 61)

For the removal of lighter soil, a soluble scrubber may be used. Some contain lanolin and lecithin as a superfat and an antiseptic like G-11. For ordinary washup, the wash stands may be equipped with liquid dispensers. Cake soaps have been found to be non-economical. For tender or defatted skins, use sulfonated oil cleansers.

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The efficacy of industrial skin cleansers can be easily tested by rubbing into the skin a fluorescent petroleum oil and then attempting to wash it off with the cleanser. Examination of the skin with a Woods' light will reveal any remaining fluorescence.

The essential requirements of an industrial cleanser are (1) that it remove soil from the skin without defatting the skin; (2) that it contain no harsh scrubber to abrade the skin; (3) that it flow easily from the dispenser; (4) that it not clog the plumbing; (5) and, that it be economical for industrial use. The cost of adequate industrial cleansers has been estimated by a well known manufacturer at about one cent for 3 days.

Where protective clothing cannot be worn, protective ointments help to shield against skin hazards. While properly prepared protective ointments, properly used, undoubtedly afford a degree of protection, it must be admitted that the cleansing action produced by workers washing off protective ointments before going home, contributes no small portion towards the protection which may be attributed only to the ointment. Therefore, protective ointments are worthwhile, if only for the reason that they induce washing after work.

There is no one protective ointment that affords the best protection against all industrial contactants. However, it has been found that lanolin, an ingredient of most protective ointments, gives fair protection against most industrial skin irritants. Protective ointments may be classified into two large groups, those that are water repellent and those that are oil repellent.

Oil repellent protective ointments or films consist essentially of hydrophilic, oil repellent chemicals such as vanishing creams, methyl cellulose, sodium alginate, Irish moss, gum arabic, etc.

Water repellent protective ointments or films consist essentially of oleophilic, water repellent chemicals such as lanolin, petroleum, ethyl cellulose, shellac, beeswax, spermaceti, cetyl alcohol, etc. Lately the silicones are widely advertised as skin protection against water soluble irritants. As early as 1947 I had tried the silicones in water repellent mixtures and found them to be good water repellents, but no better than lanolin or petroleum jelly. They do not have the emollient properties of lanolin besides being difficult to remove from the skin.

The attempt to combine a water repellent chemical like the silicones or petroleum jelly with an oil repellent chemical like vanishing cream, methyl cellulose, etc., to make a good universal protective ointment has so far not been successful.

The essential requirements of a protective ointment are (1) that it should give maximum protection; (2) that it is easily applied; (3) that it remains on the skin during work hours and yet can easily be removed with ordinary cleansers; (4) that it is a good cosmetic preparation; (5) that it does not injure the skin and (6) that it is economical to use.

From an address delivered at the 5th Plant Maintenance and Engineering Show.

Pictures by courtesy of Boyer-Campbell Co. (left); Bausch & Lomb Optical Co. (bottom right).

The Industrial Nurse

Editor
Rosamond J. Webster
R.N., A.M., Ph.D.

Safety Data

THE U. S. Bureau of Labor Statistics reports that the all-manufacturing injury-frequency rate dropped to a new low for the third quarter in 1953, the first time in 9 years that it has been lower than in the second quarter of the same year. According to preliminary reports the average of 13.9 disabling work injuries per million employee-hours worked during the third quarter was 7 percent below the previous third quarter low of 14.9 recorded in 1952.

As a result of the third quarter drop, the cumulative frequency rate for the first nine months of 1953 also reached a new low. At 14.0 it was 5 percent below the corresponding rate for 1952. That the favorable third quarter trend was general and not peculiar to a few manufacturing industries was apparent in the rates for individual industry classifications. Among 129 listed industries, only 35 had significantly higher injury frequency rates in the third quarter. The most substantial improvement occurred in the lumbering groups of industries but notable rate reductions also appeared in the furniture, primary metals, machinery and instrument manufacturing groups.

This fine record is periodically marred by serious accidents which ordinary caution and educational programs could have prevented. There are many hazards which must be guarded against. Safety Engineers, plant physicians, industrial nurses and supervisors all have to play a part.

Reader Interest

AN INDUSTRIAL nurse, who evidently reads the pages of SAFETY MAINTENANCE and PRODUCTION with close and critical attention, has raised an important question. In the March issue the question of continuing education for industrial nurses was raised, with emphasis on the fact that a national survey had indicated that industrial nurses with college degrees were comparatively few in number. The assumption naturally follows that such nurses should, as far as possible, attempt to continue their formal education and thus prepare themselves to do a more effective job in industry.

As this reader and correspondent pointed out, this hit a "sore spot" with her. It most likely raised questions and doubts in the minds of others as well.

First of all, it should be pointed out that the purpose in citing valid statistics was not to criticize, but rather to stimulate the broadening of the educational qualifications of those engaged in industrial nursing. But how is this to be done, at least by those most interested? In one city 185 industrial nurses are now enrolled in an evening course given by a medical school. Many communities are too far away from educational institutions to enable local industrial nurses to enroll in courses already being offered, or which might be offered if the demand were sufficient. In these instances, writing to the deans of universities and medical schools nearest to the place of employment may help stimulate the organization of courses by visiting teachers. This is a fairly common practice, and it would be worthwhile for nurses in a single community or in nearby areas to attempt to have such a plan developed to meet their specific needs.

Readers of this section who need advice or want further information are invited to communicate with the editor.

One A Day

THIS term is used by a distinguished physician to advise living one day at a time. Living one day at a time helps to avoid tensions of various kinds, he says pointing out that "one of the greatest curses of life today and one of the great breeders of nervousness is any work done under tension." Of course, he does not attempt to advise that one shirk a full day's work at efficient speed.

Some persons are fast workers, others have naturally slower paces. For the slow workers to attempt to main-

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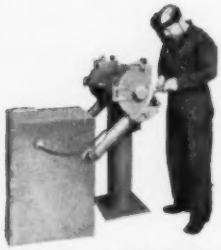

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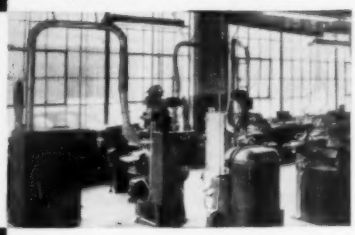

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PLACE HEADBAND WELL UP AROUND HEAD TO KEEP FROM SLIPPING DOWN
PRESS NOSE TABS IN CLOSE AGAINST FACE TO MOLD PAD AGAINST THE NOSTRILS
PRESS EDGES OF FACE PLATE DOWN TO FIT FACE SNUGLY

Weigh less than ½ ounce. Afford excellent protection against non-toxic dusts, except free silica. Replaceable cotton pads are inexpensive and sanitary.

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No. 2 Refills (Heavyweight) ..... .02½ ea.

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(For full details, use Key # R-37 on free Inquiry Card on page 77)

tain a high speed record eventually leads to tensions, nervousness, dissatisfactions, accidents and injuries. There is the case of the bank cashier who became extremely nervous and upset whenever more than 7 people lined up in front of his desk. Since he could not possibly serve more than one at a time, his nervousness and irritability were totally uncalled for. The story is told that Will Rogers was once asked what he would do if he had only 5 days to live. His common sense answer was that he would live one day at a time. Many men and women get very fussy and irritate their fellow workers. Such individuals are frequently the victims of varied frustrations and try to take out on others their own hidden doubts, dissatisfactions, deficiencies and anxieties. They can often be spotted quickly, not only by fellow workers to whom they may be just ordinary "pests", but more effectively by physicians and nurses who understand the underlying emotional problems.

Lung Cancer

GENERAL readers, as well as those in the medical and nursing professions, have by now been exposed to many newspaper, magazines and radio stories about the possible connection between cigarette smoking and lung cancer. According to a recent article in the American Journal of Public Health, the sharp increase in lung cancer mortality constitutes one of the most spectacular disease phenomena of the past two decades.

In the United States the age-adjusted mortality rate for lung cancer climbed from 2.7 per 100,000 population in 1930 to 11.0 in 1948, a more than 4-fold increase. In at least one state, California, pulmonary cancer now accounts for more deaths than does pulmonary tuberculosis, and among males aged 45-64 years it causes 4 percent of all deaths. This report is based on a 4-year study, and covers not only the history of smoking experience but also the possibility of occupational exposure as an important causative factor.

While the conclusion was drawn that cigarette smoking is a factor in lung cancer, the observation was also made that several occupations, in addition to others previously identified, may be involved in the development of lung cancer. Among these are: welding; steam fitting, boiler tending, asbestos manufacture, electric bridge crane operation in the metal industry; and occupations in the extraction of lead, zinc, or coppor ore. Marine engineers, firemen, oilers, wipers, construction and maintenance painters, commercial cooks (excluding cannery cooks) are also seriously exposed.

Final determination as to whether or not, and to what degree, cigarette smoking is an ultimate cause of lung cancer must await further study, various phases of which are already under way. The wide group of occupations in which lung cancers have been found add an additional challenge. Careful studies are needed in this area also, as well as periodic chest x-ray examinations. The industrial nurse has a distinct educational job before her in this area.

Trends in Mortality

A VALUABLE statistical bulletin published by a large insurance company brings what amounts to good news in the area of mortality statistics.

Despite an outbreak of influenza in the early months and a severe heat wave in late summer, a record low mortality was experienced in 1953. Virtually every age group showed a lower death rate than in 1952. It appears that American wage-earners and their families enjoyed exceptionally favorable health conditions in 1953, benefiting from the continued improvement in medical and public health services, the results of research in these fields, and a comparatively high standard of living. Compared with 1911, the 1953 death rate (6.5 per 1,000) showed an improvement of nearly 50 percent. Had the death rate experienced in 1911 continued to prevail in 1953, there would have been 304,000 deaths among the industrial policy holders of this insurance company last year, instead of the 119,185 actually reported. This indicates a saving of 185,000 lives for this segment of the population.

Tuberculosis mortality continued its long-term downward trend. After a drop of 23 percent in the death rate from this cause between 1951 and 1952, there was a further drop of 25 percent from 1952 to 1953. Last year's rate of 10.4 per 100,000 policy holders was only half that reported 3 years earlier. Life expectation reached an all time high of 69 years.

From Latin America

OUR industrial neighbors in the Western world below the equator are facing industrial hygiene problems which we have largely solved or learned to control. An American sanitary engineer, with the Institute of Inter-American Affairs in Lima, Peru, reports that the costs of indemnification for industrial accidents and diseases are high in Latin America compared with the number of industrial workers. Data available from detailed studies show that sums spent for indemnification represent from 12 to 15 percent of the national incomes and from 30 to 50 percent of the national budgets.

These countries have had long experience with legislation for compulsory sickness insurance, old-age and death benefits, workmen's compensation for accidents and occupational diseases, and similar provisions which cover the workers. The emphasis, however, has been on paying them for losing their health rather than on keeping them in health and on the job. The workers are exposed to many preventable hazards on the job. Industrial hygiene practices aimed at controlling these hazards are just beginning to get a hearing. There is evidently a wide need for industrial hygiene, safety and medical and nursing services. Education of employers, supervisory personnel, professional staffs and workers is essential to achieve results.

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Eye Fallacies

(Continued from page 29)

that are required to evaluate an employee's visual capacity matched to his visual job demands. Here, visual skills cannot be memorized and in one sitting accurate information can be obtained on each of these skills. The information should include the corrected and uncorrected distance vision, muscle balance for distance and near, color appreciation and stereopsis. The man who is being hired as a day laborer may not need good near vision for his job, but in very few plants does he remain in that job continuously. Unions insist that each man have the same privilege to advance into different skills and departments of the plant.

Most plants cannot put their men through medical department physical tests again when they go from shoveling coal to operating a crane; but, if everyone is unaware that the man has no stereopsis, he can cause a serious accident when operating a crane. These particular battery tests are best done by a layman—a carefully trained layman who doesn't know too much, who does not answer too many questions and who forms no opinions. Actually, it is not a job for an optometrist or an ophthalmologist.

The variety of skills needed in industry is endless. Gantry crane operators in big ship yards need stereopsis and acuity vision for distance; inspectors must see at arm's length under all types of color and reflection conditions; loopers who work 8 inches from their eye 8 hours a day need occupational glasses, electricians need to evaluate color, men who do wiring in radar equipment need still another visual skill, while a small parts assembly girl cannot have an exophoria or she develops headaches.

All of these operating skills have a direct relationship to all 5 skills which are involved in using our two eyes together. There even is such a thing as a one-eyed person being preferable for some jobs. There were several jobs during World War II in which one of a worker's eyes was covered or shut in order to do a very small near task. How foolish that was and still is when there are one-eyed people who can't get a job. Also, it is clear that for some small parts assembly and near inspection jobs, a myope is often preferable to a far-sighted person.

There is really no such thing as eye strain. Nothing happens to normal eyes that are overworked; but there is a tremendous amount of discomfort. People who are watching remote control instruments through a periscope need to have binocular instruments eventually because their depth perception is involved. Depth perception cannot be impaired continuously without risk. One may grab a beaker with something hot in it; and, if he doesn't quite reach it, he's in trouble.

One of the key points in an industrial eye program is the choice of employees referred for correction to practitioners outside the plant. In some places at one time, anybody who did not have 20/20 vision was referred to a private doctor as needing attention, but it just doesn't make sense. Management must take over some responsibility or professional offices will be flooded.

The cases to be referred are men who see less than 20/50 in their best eye corrected, particularly if they are being hired for a dangerous job. The same is true for someone doing close inspection, working in an office or checking figures. To send every employee with a minor eye deficiency to an eye specialist and then to survey the plant and say, "Between 40 and 50 percent of the employees have visual defects and need attention," is nonsense.

In the first place, what is meant by visual defects? Take someone who is color blind, for instance. You cannot refer them because the condition is not correctible, and there isn't anything to note except that he belongs on a job where judging color values is not necessary. Stereopsis cannot be listed as a visual defect on a percentage basis. It is something that you either have or do not have. If phoria and muscle imbalance cases are referred for correction in a community where there are no orthoptic technicians or doctors with orthoptic equipment to correct that condition, the plan boomerangs. The man may come back grumbling, "Who said I couldn't do that? My doctor says there is nothing important about it." This means lost prestige.

The thing management should do is to work from people who need attention the most to those who need it less urgently. The first to come are those whose work is dangerous or requires efficiency.

Professional participation in plant activities needs to be increased. It is part of the professional's duty to get into a plant to talk to safety and union groups.

There are, however, many little behind-the-scene problems that will make or break a program that has been set up. Management's attitude must be understood. It must be realized that the safety director and the nurse are talking officially and that toes must not be stepped on by ignoring any individual or department. Actually the keynote is TEAMWORK—teamwork of management, safety director, nurse, medical director or consultant, union, optometrist, and doctor.

The picture is never static, production problems change, hazards change, relationships change. If the girl who didn't like the safety man is getting married and another one is taking her place, we are laggards if we do not take advantage of that situation to promote cooperation. There is nothing that will so upset a program as to have somebody sail in and say, "This is all wrong; you must do this." Management does not take to the word "must" very well. It is the safety job to sell ideas which will be recognized as being to management's advantage in dollars and cents. There is nothing wrong, either, in talking dollars and cents, because an eye program will not only mean saving money spent on an injured eye. It may mean saving the man's eye and enable the company to continue profiting from his ability.

From an address presented at the 41st National Safety Congress.

Picture by courtesy of George Pickow, Three Lions.

TRANSPORTATION SAFETY

SAFETY BELTS FOR DRIVERS!

A SAFETY belt, recommended by traffic officers and safety personnel, has been introduced to reduce the danger of serious injury in minor accidents. The greatest number of minor accidents result from persons being thrown against the windshield or dashboard by sudden stops or changes in direction.

Facial lacerations and head injuries are minimized or eliminated by the belt which keeps a person comfortably strapped in his seat. Back strain and tension are also reduced by the device. Truck drivers who find themselves on the road for long periods of time will find the belt a particularly useful protection since it checks physical and mental fatigue. Firmly anchored to floor with stranded steel cables, the belt offers a sense of security for all drivers and passengers.

Simple to install and use, neat, and fitting all types of vehicles, the belt does not interfere with the seating arrangement or the comfort of the driver. The belt itself is strong webbing and is equipped with fast-acting aircraft type buckles, which will not slip but can be easily attached or removed. The belt is manufactured by the Rapid Tool & Mfg. Co. For details use key #TS-2 on Inquiry Card on page 77.

Cops of the "Inside Road"

EVER hear of a man getting ticketed for an improper vehicular turn ***indoors?***

It happens occasionally—but not often—at the Plymouth auto assembly plant in Detroit. The half-mile-long plant has an elaborate system of licensing jitney drivers and of traffic control, with one-way streets.

It is one of the reasons the company has earned a reputation as one of the safest big automobile plants in the country. The company has won the National Safety Council's Award of Honor for its 1952 safety performance. This was based on a frequency rate of only 2.2 lost-time accidents per million man-hours worked and a severity rate of .05 of a day per thousand man-hours worked lost due to accidents. It compares with a national automotive industry lost-time rate of 3.62 and an industry severity rate of .350.

Some 300 men operate the jitneys which move along well-marked traffic lanes to keep assembly lines supplied with parts. Yet the job is done so smoothly—and safely—that a person is really safer in the plant than trying to cross a busy thoroughfare, or driving home from work. Jitney drivers are required to pass far stiffer examinations than the ordinary automobile driver to get their operators' licenses. His safety performance is closely watched.

According to O. W. Blenkle, company safety supervisor, the most important single factor in the steady and progressive reduction of accidents has been the supervisory training program.

"Every supervisor in the plant is a safety engineer," Mr. Blenkle says. "Most of our employees are safety-minded. We couldn't have built up the record we have without their cooperation."

Picture by courtesy of Plymouth Motor Corp.

A CATALYTIC muffler that effectively reduces the noxious and irritating components of 4-cycle diesel engine exhausts has been developed. The new device attaches directly to the engine exhaust manifold and burns, by catalytic action, the noxious carbon monoxide and odorous hydrocarbon fumes in exhaust gases.

This catalytic process eliminates much of the heavy smoke and strong odor for which diesel trucks and buses are noted—and in industries such as mining will permit more widespread use of 4-cycle diesel equipment underground or in enclosed plant areas. The first model has been operating successfully for over 3 months in the limestone mine of the Coplay Cement Manufacturing Co. The new catalytic exhaust has permitted the cement manufacturer to operate a standard diesel-powered tractor-shovel underground without danger from exhaust fumes.

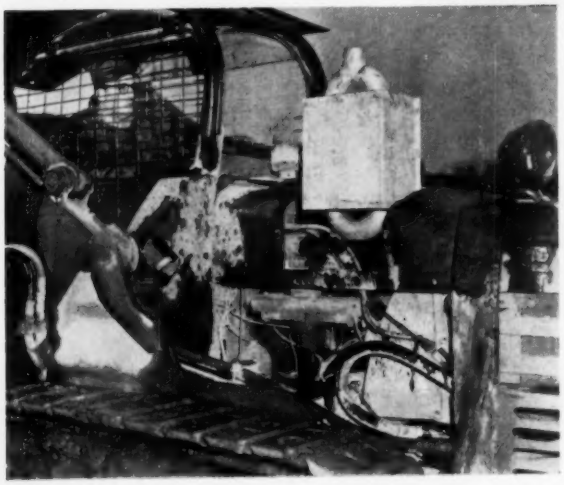
More Uses Seen

Broader applications are seen for the catalytic attachment on 4-cycle diesel trucks and buses, construction and materials handling equipment and stationary diesel engines. In such installations it can greatly reduce, and in most cases completely eliminate, the annoyance factor of the exhaust of any 4-cycle diesel engine that operates fairly steadily

(Continued on page 72)

DE-ODORIZER—Catalytic unit held by engineer is heart of CO fume control system.

DE-FUMED—Catalytic exhaust on tractor-shovel permits safe use deep underground.



DIESEL DANGERS DIE

Free Booklet for Teen-Age Drivers

"TOMMY Gets the Keys" is a 32-page, four-color cartoon book published and distributed free of charge by The B. F. Goodrich Company, with the purpose of educating teen-age drivers in safe and sane operation of an automobile. In entertaining fashion, the book makes the point that sportsmanship, the same kind we learn on the field of sport, plus courtesy and skill are the basic ingredients of good driving practice.

The book offers one answer to the national problem of highway safety—*thoroughly train the would-be teen-age driver before he gets the keys to the car.*

Copies of the new cartoon book may be obtained free of charge by writing: Public Relations, The B. F. Goodrich Company, Akron, Ohio.

Safety Courses for Fleet Supervisors

THE third annual safety school for commercial fleet supervisors and for drivers with an eye towards promotion will be given by the Greater New York Safety Council on three successive Thursdays, starting May 27. The sessions will be in the Hotel Statler, 7 to 8:30 P.M.

The course will open with a panel discussion and review of successful driver training programs employed in fleets of various sizes and in urban and over-the-road operations. The second session will be devoted to training aids by which supervisors may correct driver shortcomings. There will be discussion of the value of educational materials, driver manuals, accident cause review boards and mechanical aids. Demonstration of practical mechanical aids will follow. The closing session will cover the techniques and manner for dealing with the fact that all drivers have human problems that affect their emotions and attitudes, and which may be reflected in accident statistics if not handled properly.

Ebasco Safety Seminar

THE Seventh Ebasco Seminar in Public Utility Safety was concluded with luncheon and "commencement" exercises at the Downtown Athletic Club in New York on March 19th. Representatives from major utility companies in the United States, Chile, Costa Rica, Panama and Venezuela received certificates for their participation in the seminar.

The safety seminars are sponsored each year by Ebasco Service Incorporated under the direction of W. T. Rogers, Ebasco's Safety Director. During the Seminars operating and staff personnel of client companies may receive special training in the modern techniques, tools and methods of accident prevention. The two-week program is conducted in cooperation with the staff of New York University's Center for Safety Education. In addition to attending classroom sessions on such subjects as safety programs, effective speaking, human relations, training techniques and special aspects of public utility safety, the members made field trips to various installations.

In initiating the graduation ceremonies, Mr. Rogers complimented the group on their excellent participation and enthusiasm and expressed gratitude to the New York University staff for their cooperation. Dr. H. J. Stack, Director, Center for Safety Education, New York University, in a brief address reminded the group that it was the responsibility of each member to carry back to his local community and individual company, the safety theme developed at the seminar. Dr. Walter Cutter, Assistant Director, reminded all present that they constitute an important part of an immense conservation effort. To illustrate this remark, Dr. Cutter called attention to the fact that the millionth traffic death has been recorded in America. On the brighter side, Dr. Cutter observed that since 1912, the industrial accident rate has gone down 55 percent.

Dean Paul A. McGhee, Division of General Education, New York

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(Use Key # R-40 on Inquiry Card on page 77)

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(Use Key # R-41 on Inquiry Card on page 77)

University, cited this seminar as an excellent example of a joint endeavor by a university and industry.

M. G. Reed, Vice President of Ebasco International Corporation, called the group's attention to the progress being made in safety in Latin America and commented on the contribution of seminars of this type to Inter-American relations.

Speaking as "valedictorian" for the class, Roy P. Moller, Head, Employment & Employee Welfare Department, The Washington Water Power Company, expressed the appreciation of the group for the opportunity to participate in the Seminar and complimented Ebasco and New York University on the scope and organization of the two-week program. Another highlight of the graduation activities was the presentation of the 100th Ebasco Safety Seminar Certificate to Bill C. Hall, Safety and Training Supervisor, Carolina Power & Light Company.

Diesel Fumes

(Continued from page 70)

at 60 percent of rated load or more. Prototypes have been laboratory tested on diesel engines that have been loaded to simulate the work cycles of trucks, buses, tractors and locomotives. In all tests the catalyst eliminated 65 to 85 percent of irritating hydrocarbons, and 80 to 90 percent of carbon monoxide.

The cement manufacturer reports that, even with continuous operation of the tractor-shovel equipped with the catalyst, carbon monoxide exhaust concentrations have dropped below 0.003 percent. This is below the Bureau of Mines maximum atmospheric concentration of 0.01. The catalyst is doing just as thorough a job of cleaning up hydrocarbon fumes—the irritating, odor-causing components of diesel engine exhaust, the company states. Operators have reported no detectable traces of hydrocarbon odors or smoke from the unit even when operated in dead-end headings 1000 feet from the mine entrance.

The company now has on order a second catalyst-equipped diesel unit —a 65-horsepower tractor-loader. Like the tractor-shovel, it will be used both in and out of the mine. On the basis of performance at the mines, the catalytic unit may add impetus to two growing trends in mining—the shift toward trackless mining and the increasing use of diesel equipment underground.

More and more, mines have been shifting to mobile underground equipment not confined to a track bed. The full potential of this trackless mining technique has not been realized, though, because of the lack of inexpensive mining equipment that will operate safely underground. The diesel—rugged, cheap to operate and easy to maintain—has long been recognized as an ideal prime mover for mining applications, but its widespread use has been retarded by the engine exhaust problem. The catalyst has now removed that hazard and will permit mine operators to convert conventional diesels to safe underground work.

The catalyst exhaust, installed on the front of the tractor-shovel atop the engine, is connected directly to the engine exhaust manifold. It is a twin-flow, heavy-gage steel assembly containing 8 catalytic sections. Over-all dimensions are 7 by 12 by 27 inches.

Each catalytic unit is a compact porcelain structure containing 73 slender porcelain rods that are coated with the catalytic agent—alumina and platinum alloy. As the hot engine gases flow across these rods, they are catalytically burned to carbon dioxide and water vapor. Because of the streamlined cross section of the rods, back pressure is negligible.

The catalytic unit is the latest addition to a family of catalyst installations for heat recovery and air pollution control. The previous uses include a catalytic muffler for engines running on unleaded gasoline and stack control installations.

Pictures by courtesy of Oxy-Catalyst, Inc.

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What's New . . .

For your convenience in obtaining descriptive literature of products listed here, use the Reader's Inquiry Card. Just write in the code number given with each item. Or send written requests to:

Service Dept.,
SAFETY MAINTENANCE & PRODUCTION

FLOOR MACHINE DUST PICK-UP ATTACHMENT

(Use Key # 973 on Inquiry Card on page 77)

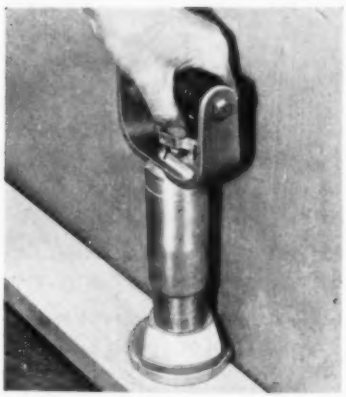
A DUST pick-up vacuum cleaning attachment for use on Multi-Clean floor machines while doing light sanding or finish sanding has been announced by Multi-Clean Products, Inc. According to the manufacturer, the unit can be put on or taken off any of the company's heavy duty floor machines in 10 minutes by the user.

The device consists of a detachable vacuum power unit with 1 hp. motor that mounts on the floor machine handle, and a suction ring assembly which clamps to the base of the machine without drilling. Both the vac and the machine operate together from the switch lever directly under floor machine handle bar. However, if desired the floor machine can be operated independently. An adjustable leather shield concentrates suction for thorough vacuum cleaning action. This coupled with the fact that the vac unit is capable of a 46-inch water lift provides ample power to pick up all sanding dust completely, it is claimed. Dust bag is easy-empty type, and dust hoses are flexible so that machine handle remains completely adjustable to comfortable operating position.

OIL & GREASE ABSORBENT

(Use Key # 974 on Inquiry Card on page 77)

TO REDUCE slip and fire hazards caused by oil and other spillage around machines and tanks, Wyandotte Chemicals Corp. has produced a calcined clay which is said to readily absorb oil, grease, water, ink, food wastes, chemicals and other liquids. Called Zorball, the absorbent is non-slip and non-flammable, even when saturated with oil. The absorbent will not harm fabrics, wood, metal, or rubber, and will not irritate the skin. Easily removed, as it will not cake and stick to floors.



POWERED DRIVING TOOL

(Use Key # 975 on Inquiry Card on page 77)

A NEW cartridge-actuated tool for setting studs in concrete or steel is announced by the Velocity Power Tool Co. The tool has a permanently attached spall or protective shield. For close-to-the-wall jobs a section of the spall shield may be lifted and turned out of the way.

Called the Velocity-Power Driver, it is used on both new construction and maintenance jobs in electrical, heating, plumbing and air conditioning installations, saving time, labor and money because it enables the user to set a stud within seconds. The worker simply loads, positions and fires it and the job is done. Use of an integral cartridge eliminates the need for matching and fitting. Interchangeable barrels permit driving of either ¼ or ⅜-in. studs with the same firing unit. Studs available are either solid head, or internal or external-threaded. A spring-loaded safety arm and center-fire cartridges avoid accidental discharge, and assure the correct load for the job.

ALUMINUM STAIR TREAD

(Use Key # 976 on Inquiry Card on page 77)

A NEW metal safety stair tread has been developed by Wooster Products Inc., to provide an easy, economical method of repairing worn stairway treads as well as preserving new treads. Called the "Stairmaster," the tread is made with a permanent extruded lightweight aluminum alloy base in a standard 9" depth, which is suitable for all stairways. The Stairmaster is furnished in length as required so that no cutting is necessary, and the treads can be easily installed over worn stair treads after the existing tread has been leveled with mastic. The tread has eleven rows of firmly embedded safety ribs containing diamond hard abrasive grains that provide positive anti-slip protection. These ribs are so durable and tough they cannot be cut with a metal saw. The tread has a 1⅛ inch lip which covers and protects the face of the stair tread.

The Wooster Stairmaster is easily applied on all types of stairs, such as wood, concrete, slate and marble. Screws or combination screw and lead shield are used to securely fasten the tread to the stairs. Proper length is easily determined by subtracting 6" from length of existing stair tread which provides 3" sweeping space at each side. Engineered to meet the requirements of insurance underwriters.

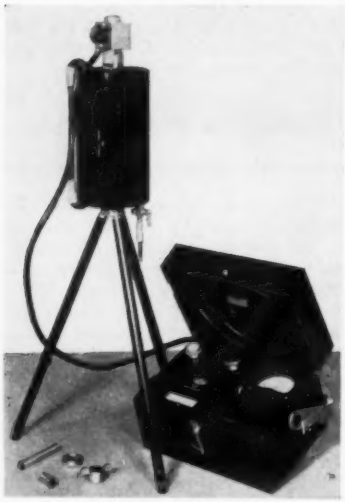
DUST-MEASURING EQUIPMENT

(Use Key # 977 on Inquiry Card on page 77)

MINE Safety Appliances Company has been named exclusive distributor in the United States for a line of dust-measuring instruments manufactured by C. F. Casella & Company Limited, of London, England.

The instruments now being introduced include the "Cascade Impactor," for discriminatory collection of air-borne dusts by particle size; "Settlement Dust Counter," for accurate collection of dust particles or air-borne bacteria; "Thermal Precipitator," for sampling a wide variety of smoke, fumes and dusts, organic or inorganic; and the "Jet Dust Counter," for rapid or "snap" dust sampling without interruption of operations.

The impactor operates on a principle involving low jet speeds in collecting either solid or liquid particles. Efficiency



of collection approaching 100 percent is claimed for particles in a size range from 0.7μ up to 50μ. The settlement dust counter achieves accuracy by enclosing a definite volume of air and by eliminating such disturbing factors as terminal velocity of particles, turbulence, air movement and temperature, and humidity. The thermal precipitator is well-suited for highly accurate sampling of all kinds of airborne particles, but particularly dust clouds, organic or inorganic. The dust sample obtained is examined under a high-power, high-resolution microscope. The rapid sampling made possible by use of the jet dust counter is said to be especially valuable for estimating the concentration of dusts at a variety of points in factory, mine or other location, and in dust control work where a large number of samples may be taken over a period of time for comparison.

SALT PREVENTS HEAT FATIGUE

(Use Key # 978 on Inquiry Card on page 77)

AS THE weather gets warmer most people who do physical work in factory, garden or at sports and play are in danger of heat fatigue unless sufficient salt is taken to replace body salt lost through sweating.

Salt helps keep the body functioning properly. People who perspire a lot may become dehydrated. Then, as they drink more water to offset this condition, body fluids are diluted. Heat cramps, or even heat prostration, may result.

An easy way to replace this lost salt is by the use of salt tablets. A new improved type of salt tablet is made by Morton Salt Company. Each tablet is impregnated by a patented process to make it non-nauseating. Use of these yellow impregnated salt tablets makes it possible to replace salt losses promptly, but at a gradual rate.

WATERPROOF FIRST AID KIT

(Use Key # 979 on Inquiry Card on page 77)

A WATERPROOF, airtight first aid kit has been placed on the market by Johnson & Johnson Limited. Made of a clear, heavy gauge, vinylite plastic with an extruded plastic slide closure called Flextite, the kit insures maximum protection for the articles inside.

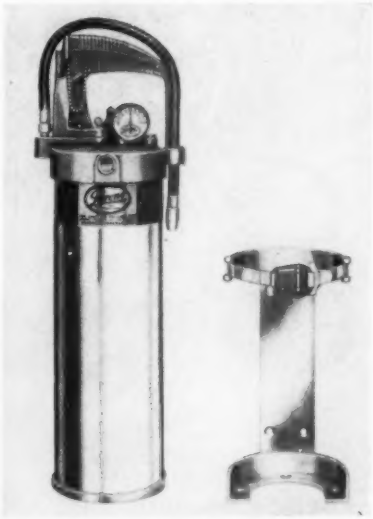
Other advantages of the new kit are its lightweight plastic construction, which makes it easy to store or pack, and its resistance to oil, grease, strains and abrasion. Because of the diagonal front closure, the case can be placed upright, upside down, or on its side without danger of opening.

The kit can be opened easily by lifting a small vinylite tab attached to the closure, and closed just as readily by running a finger along the length of the closure, applying firm pressure. Bright red letters across the front identify the kit and point out the tab to be lifted when opening. In addition, there is a small tab on the back of the kit which can be used to hang it on a wall.

WEED KILLER

(Use Key # 980 on Inquiry Card on page 77)

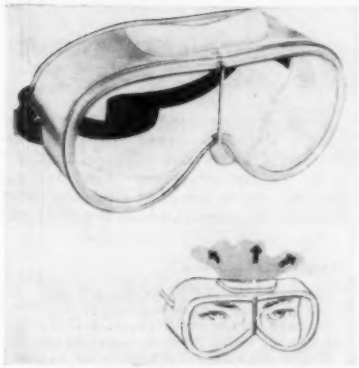
A NEW type of weed killer has been added to the outdoor products line of The C. B. Dolge Co., manufacturers of chemicals for maintenance. Called N P Weed Killer, it is a readily soluble powder that requires no agitation to keep it in suspension. A built-in spreading and wetting agent wets waxy surfaces of leaves and plants and increases contact and penetration. While this preparation kills on contact, it also acts by translocation to finish roots; heavy doses sterilize soil so seeds cannot sprout. It is non-selective—for use where no growth is wanted——and can be sprayed, sprinkled or used as a dry powder, so long as the recommended amount is applied to the treated area. Quick acting, non-flammable, non-volatile, non-corrosive.



2-QUART VL EXTINGUISHER

(Use Key # 981 on Inquiry Card on page 77)

A 2-quart capacity stored air pressure vaporizing liquid fire extinguisher of modern design has recently been introduced by Pyrene Manufacturing Company. This latest addition to the Pyrene line has a new combination carrying handle and squeeze-type operating valve that is center balanced for easy manipulation. Permits conservation of liquid and fast maneuvering about fire; one hand holds the extinguisher and starts or stops the discharge leaving the other free to direct the 30-foot hose stream that is effective on Class C (electrical) and Class B (flammable liquid) fires. It may be recharged at once by refilling with Pyrene liquid and pressurizing from a factory, garage or gasoline station air hose. An outer chamber that holds Pyrene liquid is constructed of sturdy light weight stainless steel. An inner chamber holds air under pressure. Head and base are bronze painted red. Equipped with liquid level glass port and air pressure gauge for quick visual inspection. Wall hook is supplied; clamping bracket for mounting on vehicle is optional. Fully approved by Underwriters' Laboratories and Factory Mutuals.



NEW CHEMICAL GOGGLE

(Use Key # 982 on Inquiry Card on page 77)

A NEW, soft vinyl frame safety goggle, for protection against chemical splash, molten metal, sparks and impact hazards is called "Stac-Vent." The name comes from a new principle in goggle ventilation which prevents fogging by drafting off warm, moist air from the top and center of the goggle (where it normally accumulates) just as a chimney drafts off smoke. Large ventilation holes are possible because they are safely shielded by the "Stac-Vent" hood. A soft vinyl frame, with pliable edge-fins, yields to the contours of the face and nose, closing all gaps without pressure. The lightweight frame is comfortable to wear and is large enough to fit over any prescription glasses. Frames are available in clear, transparent green or opaque black vinyl plastic. Replaceable lenses are held in frame by a positive lock bar. Lenses of optically correct, shatterproof Methacrylate (for heavy impact) can be furnished in clear plastic or a choice of light, medium or dark green. At lower cost, acetate lenses (for light impact), also optically correct and shatterproof, are available in clear or medium green. Made by Watchemoket Optical Co.

BARRIER SKIN CREAM

(Use Key # 983 on Inquiry Card on page 77)

A NEW barrier skin cream to protect industrial workers against contact dermatitis is announced by Ayerst Laboratories, Inc. The new cream is called Kerodex and is designed to prevent dermatitis caused by primary irritants such as acids, alkalis, oils, tar, and pitch as well as sensitizing agents such as nickel, rubber, chromates, and poison ivy. The cream provides a protective coating which is invisible, yet strong and elastic, and will not smear or affect the materials handled. It may be applied to the face, hands, or any other area of the skin.

Since most irritants are water-soluble or water-insoluble, two types of Kerodex are available for so-called wet and dry work. There is a "push-off" feature for removal of the cream, eliminating the need for harsh abrasives or strong soaps in day-to-day washup. The manufacturer states that successful results have been obtained with the new cream in such industries as transportation, printing and lithography, rubber, plastics, paints, food production and food handling, cutting oils, and chemical and allied fields.

EXPLOSION-PROOF ELECTRIC FORK TRUCKS

(Use Key # 984 on Inquiry Card on page 77)

UNDERWRITERS' Laboratories-approved Electric Carloader series fork trucks for operation in hazardous areas covered by Underwriters' Class I, Group D classification, in capacities from 3000 to 5000 pounds, are now available from Clark Equipment Company.

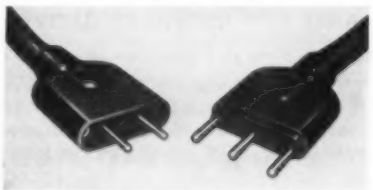
The Clark Electric Carloaders have an "EX" truck rating, which means that they are approved for operation in atmospheres containing explosive vapors such as gasoline, petroleum, naphtha, benzene, butane, propane, alcohols, acetone, benzol, lacquer solvents and natural gas. The trucks have been specially designed to make them explosion-proof. These modifications include a special frame and totally enclosed explosion proof panel, master switch and resistor, limit switches for the seat brake, foot brake, hydraulic control valves, pump motor and drive motor. Static-conductive cushion tires as well as special explosion-proof plugs are used on these machines. Other safety measures include the use of bronze forks and wooden bumper guards. To prevent spark-jumping, sealing Unilets or boxes are inserted at various points in the circuit, such as between plug and battery, master switch and panel, panel and seat brake, panel and resistor, panel and foot-brake limit switch and valve limit switches. The boxes are packed with special material that absorbs and snuffs out any sparking. As a further precaution, there is no key switch on the steering column. Instead, the switch is incorporated on the battery and serves the dual purpose of closing the circuit and locking the plug and receptacle together. To aid the operator, the machines are furnished with plates mounted on the frame giving the necessary operating instructions.

ASSORTMENT OF HYDRAULIC EQUIPMENT

(Use Key # 985 on Inquiry Card on page 77)

THE Blackhawk Mfg. Co. announces a new assortment of its hydraulic "Porto-Power" equipment. Designed for industrial maintenance and construction work, this 46-piece assortment has the latest in remotely-controlled hydraulic jacks and attachments for pulling gears, moving machinery and hundreds of other maintenance jobs. It conserves manpower and eliminates hazardous makeshift devices that endanger personnel and machinery.

One hydraulic pump, with a swivel-connected coupler, serves the four hydraulic rams in the set. A "midget" 4-ton ram lifts from a low of 1 11/16"—providing tons of power in the tightest spots. There's a 7-ton short ram plus the general purpose 10-ton ram and a heavy-duty 20-ton ram. Forty-one selected attachments adapt these rams to many types of pushing, pulling, lifting, clamping, spreading, bending and pressing jobs, according to the manufacturer. The assortment includes the newly developed "Lock-On" Tubing, Connectors and Adaptors which are said to reduce assembly time over 50%. The equipment is called the FZ-15 Super Maintenance Assortment.



DISTORTION PROOF ELECTRICAL CONNECTORS

(Use Key # 986 on Inquiry Card on page 77)

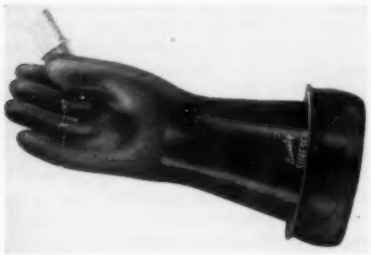
ONE-PIECE electrical connectors that bounce like a ball, are the Joy Manufacturing Company's answer to industry's rigorous requirements. Contacts (male and female) are wired and then insulated and jacketed with specially prepared rubber-like compounds under heat and pressure of molding process, into one-piece resilient units. Resulting plugs and receptacles are reported to be distortion proof, moisture tight and highly resistant to the deteriorating effects of sunlight, oils or acids. Many styles and sizes are available for industrial needs.

TOOL LOOSENS FROZEN PARTS

(Use Key # 987 on Inquiry Card on page 77)

A PRESSURIZED can is now available, which will permit a lineman, clinging to a pole, to squirt a stream of Kroil on a frozen bolt with one hand, and then loosen it easily. Furthermore, the can may be kept in his kit without leaking.

The new aerosol pressurized can of Kroil just announced by Kano Laboratories provides a very handy tool for any job of loosening stuck together metal parts such as bolts, bearings, bushings. Kroil is a chemical solvent, harmless to metal and with a pleasant odor. It is said to penetrate into spaces as small as one millionth of an inch, soften rust, dissolve dried grease and oil.



ANTI SLIP NEOPRENE GLOVE

(Use Key # 988 on Inquiry Card on page 77)

TO PROVIDE maximum effectiveness in non-slip gripping action, the Surety Rubber Co. has developed a new Griptite finish for use on its non-allergic Neoprene type industrial gloves. The glove has a permanent rough-finish and can be used safely in handling the most delicate materials because of the absence of abrasive particles in the construction.

The non-allergic feature of the gloves, which come in varying lengths and weights, is popular with workers who find it necessary to wear the gloves while working in oil, grease, gasoline, detergents, waxes, soaps and acids. In addition to being impervious to foreign matter, the finish will not peel or chip off during the entire lifetime of the gloves.

The Neoprene regular style glove comes in light, medium and heavy weight types. The Turn-Cuff model comes in both medium and heavy weight style.

FLAMMABLE LIQUID STORAGE CABINET

(Use Key # 989 on Inquiry Card on page 77)

A NEW storage cabinet for flammable liquids is announced by The Protectoseal Co. Called the Protectoseal Steel Storage Cabinet, it is a 45-gallon cabinet with three steel shelves and is of double walled construction of 18 gauge terne plate throughout with 1½ inch air space between walls.

The cabinet has a double door which provides easy access to every can, and door is equipped with a three point lock. The door sill is raised, and the overall dimensions are 43 inches wide x 65 inches high x 18 inches deep. Designed and built in accordance with the recommendations of the National Board of Fire Underwriters, the cabinet has been approved by the Chicago Fire Department.

REVIEW LIST OF RECENT "NEW PRODUCTS"

New developments bring new problems. Perhaps these new products described in recent editions can solve your safety problem. For complete details, insert the Key Number on the Readers Inquiry Card on the next page.

January 1954 issue:

	Key No.
Explosion-Proof Fluorescent Light	A-898
Ice-Removing Chemical	A-899
Solvent Spray Gun	A-900
Lens-Cleaning Station	A-901
Safety Equipment Sanitizer	A-902
Refill Blocks for Floor Scrubbers	A-903
Chemical Cartridge Respirator	A-904
Lens Cleaning Tissues	A-905
Self-Adhesive Aisle Markers	A-906
Extra Duty Work Glove	A-907
Electrical Safety Cleaner	A-908
Fork Truck Load Stabilizer	A-910
Dry-Chemical Extinguisher	A-911
Fluorescent Lamp Replacer	A-912
High Air Velocity Vacuum	A-913
Magnesium Roller Conveyor	A-914
Lifeline Safety Lock	A-915
Floor Sweeping Compound	A-916

February 1954 issue:

	Key No.
Non-Irritating Skin Cleanser	A-917
Rubber Foot Matting	A-918
Extinguisher Safety Check	A-919
Hydrocyanic Gas Tester	A-920
Visored Safety Spectacles	A-921
Vacuum Grip Tool Handles	A-922
Auxiliary Lights	A-923
Steel-Capped Glove	A-924
Fume Hood	A-925
Fire Resistant Paint	A-926
Light Bulb Changer	A-927
Anti-Static Fluid	A-928
Burn Spray Kit	A-929
Smoke Odor Service	A-930
Catalytic Sweeper Exhaust	A-931
Solvent Emulsion Cleaner	A-932
Industrial Health Services	A-933
Locker Rack	A-934
Paper Work Caps	A-935
Elevating Stretcher Cot	A-936

March 1954 issue:

	Key No.
Three-Ply Asbestos Mitten	A-937
New Packaging of First-Aid Units	A-938
Lightweight Waterproof Suit	A-939
Glass-Fiber Fire Hose	A-940
Fire Instruction Sticker	A-941
Plastic Ear Plug	A-942
Safety Training Kit	A-943
Flame-Proofed Cotton Disposable Towels	A-944
Interchangeable Head-Gear Mounting	A-945
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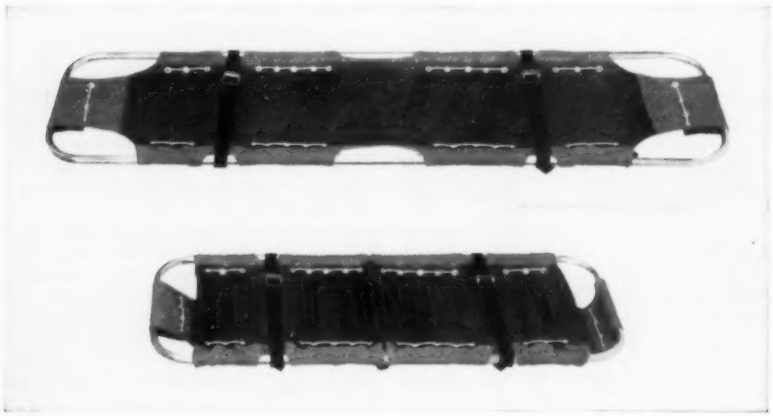

TELESCOPING STRETCHER

(Use Key # 990 on Inquiry Card on page 77)

A NEW type of emergency stretcher whose length can be adjusted from a full 6 feet down to 4 feet by a telescoping method is announced by the Washington Mortuary Supply Co. There are no locks or catches on the new Model 15 "Adjusto" Stretcher and it is adjusted by pushing in or pulling out the ends. This feature is advantageous in close places.

The first aid unit, made of Duraluminum, is very strong but weighs only 8½ pounds. It is available in different widths and lengths.

FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. To obtain copies write in the key numbers on the free-postage card below.

FIRE PROTECTION

Turbines for Fire Pumps 368
General Electric Co. Pamphlet discusses mechanical-drive turbines for fire pumps. Schematic diagram shows all parts, and uses explained. Approval by National Board of Fire Underwriters noted.

Dry Chemical Equipment 369
Ansul Chemical Co. Technical bulletin discusses effect of dry chemical on electric motors and generators. Examples of equipment on which dry chemical was used cited and information on use of dry chemical equipment given.

Oilers & Oil Containers 370
Eagle Mfg. Co. 44-page catalog shows complete line of oiling equipment, filling cans, and containers for hazardous liquids. Each product pictured, described, and specifications given. Approval by Underwriter's Laboratories and Factory Mutual Laboratories noted where appropriate.

Flame Failure Explosions 371
Combustion Control Corp. 11-page bulletin offering non-technical explanation of explosion danger in fuel burning equipment and protection available. Shows how to determine whether equipment is adequately protected. Products carry approval of Underwriter's and Factory Mutual Laboratories.

ATMOSPHERE CONTROL

Dust Collectors 372
Torit Mfg. Co. Complete line of dust collectors described in 16-page catalog. Cabinet and cyclone type collectors, blowers, exhausters, and accessory equipment shown. Many illustrations, sketches, and specification charts, as well as a guide to the selection of equipment included.

Electrostatic Air Cleaner 373
Westinghouse Electric Corp. Bulletin describes ceiling-suspended model of electrostatic air cleaner. Installation in conventional warm air heating system with service and utility connections shown. Each of the features of this electronic device for removing airborne dust and pollen described.

BUILDING MAINTENANCE

Scaffold Selector 374
Patent Scaffolding Co. 8-page guide to selecting the right ladder or scaffold for plant maintenance operations. Work broken down into four categories: painting and cleaning, electric and equipment maintenance, plant repair and maintenance, and special jobs.

Floor Waxes 375
Huntington Laboratories, Inc. Line of anti-slip and stain resistant floor waxes described in bulletin. Different waxes recommended for different type floors. Approval by Underwriters Laboratories shown where appropriate.

Roofing Maintenance 376
Colonial Refining & Chemical Co. 12-page booklet in non-technical language and liberally illustrated shows how roofs may be maintained and repaired by new process. Instructions given and products recommended for various jobs.

Control of Floor Dust 377
West Disinfecting Co. Brochure shows how antiseptic floor cleaner controls dust accumulated on floors and other surfaces. Also protects against air-borne bacteria on dust particles.

PERSONAL PROTECTION

Acetate Frame Goggles 378
Welsh Mfg. Co. Bulletin describes series of acetate frame spectacle-type goggles with or without side shields. Different types of bridges, eye sizes, lenses, and shields listed.

Plastic-Coated Glove 379
Granet Corp. Various styles of plastic-coated work gloves shown in bulletin. May be entirely or partially coated. Specifications given and resistance to abrasion, chemicals alkalis, oils, and greases noted.

Face Shield 380
Willson Products, Inc. Bulletin gives complete information on acetate face shield for woodworking, spot welding, metal sawing and buffing. Lightness of weight and various sizes available pointed out.

Lineman's Boots 381
Surety Rubber Co. Bulletin describes lineman's boots made of rubber of high dielectric strength. Pulled over regular shoes, reenforced against wear from climber straps and other points of wear. Guaranteed for 10,000-volt test.

MACHINERY GUARDS

Punch Press Guards 382
Searjeant Metal Products, Inc. Various types of metal and plastic guards shown in bulletin such as, basket guard, non-repeat mechanism, and zone barrier, and single and double sweep guards.

Guide Pin Cover 383
Wiesman Mfg. Co. Brochure describes and gives specification on covers for guide pins for die sets to protect operator and guide pin. Available in covers for gap only or for entire pin and gap.

ELECTRICAL EQUIPMENT

Over-The-Floor Duct 384
Winders & Geist, Inc. A rubber duct for over-the-floor surface wiring described in brochure. Ease of installation and resistance to moisture noted, also reduction of tripping hazard.

Overload Device Tester 385
Multi-Amp Corp. Line of instruments to test overload protective devices shown in pamphlet. Specifications and test records given. Helps to reduce burned out motors, fires, premature trip-offs, etc.

Emergency Lights 386
Carpenter Mfg. Co. 8-page catalog of portable lights, lights for emergency vehicles, and lights which operate when main source of power fails. Specifications given and approval by Underwriters Laboratories indicated.

(Continued on next page)

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MISCELLANEOUS

Safety Signs **387**
Prairie State Products Co. 33-page illustrated catalog of standard industrial accident prevention signs, directional signs, flange and bracket warning signs, and electric-phosphorescent signs.

Safety Awards **388**
Williams Jewelry & Mfg. Co. Brochure shows line of plaques, committee badges, and specialized plaques for awards to personnel and departments. Each award individually illustrated and specifications given.

Water Coolers **389**
Ebco Mfg. Co. 8-page catalog describes and pictures various types of water coolers such as pressure coolers, bottle-type coolers, explosion-proof coolers, cafeteria and restaurant coolers, and heavy duty industrial coolers.

Agitator Selector **390**
Eclipse Air Brush Co. A dial-type selector for determining the proper agitator for liquid batch mixing problems. Selection is based on the amount of liquid to be mixed and the consistencies. Reverse side has description of typical agitators.

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(For full details, use Key # R-45 on free Inquiry Card on page 77)